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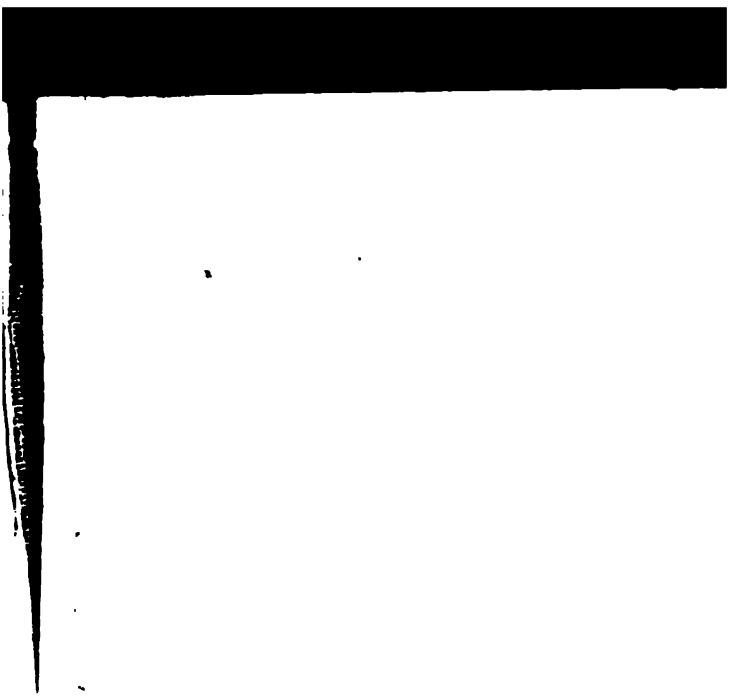

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THE MONISM OF MAN

OR

THE UNITY OF THE DIVINE AND HUMAN

WITH THE
COMPLIMENTS OF THE AUTHOR

G. P. PUTNAM'S SONS
NEW YORK
27 WEST TWENTY-THIRD STREET
LONDON
24 BEDFORD STREET, STRAND
The Knickerbocker Press
1893

THE MONISM OF MAN

OR

THE UNITY OF THE DIVINE AND HUMAN

BY

DAVID ALLYN GORTON, M.D.

FORMERLY EDITOR OF THE NATIONAL QUARTERLY REVIEW, AUTHOR OF "THE PRINCIPLES OF MENTAL HYGIENE," "THE DRIFT OF MEDICAL PHILOSOPHY," ETC.

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PREFACE.

THE volume herewith given to the public comprises a series of essays that was contributed by the author to *The National Quarterly Review* during the period of his editorial charge of that work. The essays have been rewritten and the subject enlarged upon so as to form a consistent whole. In the discussion of the subject, the author, while mindful of the verities, or established truths, has been hampered neither by the creeds of Christendom, nor the dictum of science. He cannot pretend to have fathomed the depths of the subject, since it is unfathomable. While he thus recognizes the limitations of finite faculties and the vastness of the sphere of unexplored knowledge, he has endeavored to be in all things rational. If he has succeeded in this endeavor he will abide with content any difference of opinion that may exist between the reader and himself.

THE AUTHOR.

CONTENTS.

PROLOGUE.

PHILOSOPHY AND THEOSOPHY, ... ix

PART I.

MATTER, LIFE AND MIND, ... 1

PART II.

SOUL AND BODY, ... 43

PART III.

BODY AND SOUL, ... 87

PART IV.

THE UNITY OF THE NATURAL AND SUPERNATURAL, . 129

PART V.

THE UNITY OF DIVINE AND HUMAN AGENCY, . . 171

PART VI.

CRITIQUES ON DIVINE AND HUMAN AGENCY. . . 207

EPILOGUE.

THE SCOPE OF INDUCTIVE PHILOSOPHY, . . . 249

INDEX. 287

PROLOGUE.

PHILOSOPHY AND THEOSOPHY.

"It is the very essence of philosophy to rest on the foundation of common perceptions, and by reasoning from these to account for phenomena."—*Challis.*

PROLOGUE.

PHILOSOPHY AND THEOSOPHY.

IT may not be uninteresting nor unprofitable, as preliminary to the study of the unity of the two-fold aspects of Nature, the physical and psychical, briefly to consider the methods which intelligent men of opposite intellectual tendencies have employed in interpreting the phenomena of the world.

From the dawn of human intelligence the rational and the mystical, or the ideal and sceptical, have contended with each other for supremacy in human thought. One comprehends the Inductive method; the other, the Deductive. The one approaches its subject from the stand-point of observation; the other from ideas and perceptions derived from intuition. The one explains phenomena by discovered laws and principles; the other, by ideas and principles preconceived or assumed, independently of established data.

These opposite methods of solving recondite problems reached a brilliant climax in the fifth century before the Christian era, in the schools of philosophy in Greece, headed, on the part of the

Idealists, by Parmenides, and on the part of the Sceptics, or Rationalists, by Democritus. With Parmenides, the idealist, were associated such renowned names as Melissius; Gorgias, who wrote a book on the "Non-Existent;" Polus, Callides, Critias, Thrasymachus, and others; while on the other hand, with Democritus, the sceptic, were associated his pupil Leucippus, the ill-fated Protagorus of hemlock fame, Lucretius, Prodicus, Diagoras, Nessus, Metrodorus, Diomenes, Anaxarchus, and others less distinguished. Later, the two opposing philosophies were represented respectively by Plato and Aristotle, their pupils and followers.

The endeavor to comprehend the universe was an inspiration of the intellect; and in the absence of knowledge, or coördinated facts to build upon, it was natural that this faculty should construct a universe to suit itself, not from observed data, because it were not, but from its own ideals. In this way the early ideal systems of cosmogony were constructed, those of Moses and Plato being the more familiar to us. Awed by the majesty exhibited in nature and natural phenomena, the devout and imaginative delighted in referring everything to the agency of a self-existent, determining intelligent Cause, on whose omnipotent volition everything depended. To his imaginative mind, the earth was the Lord's special possession and domain, to which the heavens above were contributary. The sun was placed in the heavens to give it light by day; the moon and stars were hung in the firmament to give it light by night. This was their chief and only

function; the only reason conceivable for their existence. The seasons were of the Lord's ordering. He breathed the breath of life into man; willed the development of animal life, the growth of vegetation—of fruits and flowers, the verdure of the fields, the trees of the forest, the yield of the harvest, and made the treasures of the mineral kingdom—the coal, iron, gold, silver, copper and other metals, the diamond, pearl, ruby and other precious stones—especially for man's use and enjoyment. All things were created by the fiat of His will, and by the exercise of the same fiat all things could be destroyed—the earth itself annihilated, and matter cease to be.

Such is a brief statement of the Hebraic cosmogony which has shaped the course of theosophic thought among western nations since the beginning of the historic period. The Platonic system was less crude and commonplace, but equally devoid of scientific verity. The cosmogony of Plato may be said to be more ideal, but the earth was still the centre of the universe. It is the creation of a masterful brain, an exhibition of pure reason—in the realm of metaphysics, without positive data to start from—compared to which that of Kant, or Schopenhauer is but a crude imitation. With Plato, intuitions were primary; observation secondary. "God has begotten the universe from all eternity," he says, "and in its production he has followed the idea, or the perfect type of all possible things as existing in Himself. Matter was before the universe and is its mother, as God is its father. Thus the universe is the thing begotten, God is the beget-

ting principle, and matter is the substance in which the universe is begotten. Thus, mind and necessity are the efficient cause of the universe; for the mind is nothing else but God, and necessity is one and the same thing as matter." In this declaration of the divine Idealist is formulated the *dual* principle of mind and matter, body and soul, which still occupies a prominent place in modern philosophy, mind, however, always ranking, or taking the precedent of matter in the origin of things. Nay, stronger than this: with Plato the finite mind was a part of the Infinite mind and shared the Infinite's omnipotence in the sphere of the finite.

The method of the Sceptics, or Rationalists, was in striking contrast to that of the Mystics, or Idealists, who sought in the heavens for a knowledge of that which was under their feet. "It were a good caution for a man who studies nature to distrust those things with which he is not conversant."* The sceptics required men to think, to examine, to scrutinize, to doubt; to accept nothing on authority, but to require evidence as a condition of belief. They demanded a reason for their belief, not mere assertion. The earlier sceptics—even the prince of the sect, Democritus, himself—did not deny the existence of the gods, for that was impiety even at Athens in his day, the penalty of which was hemlock, but insisted that they had no part in the processes of nature. They were phantoms, objects

* Playfair.

of beatitude, according to Democritus, which "concern themselves neither with the universe nor with mortals." In his view, matter and force were adequate to explain the phenomena of the universe. According to Prodicus, the gods were still more mythical. He regarded the gods as a "product of our gratitude for the things that are useful to us." Turning away from these speculative problems which lie beyond the scope of finite faculties, the sceptics did not attempt to *construct* a universe, but they endeavored to *discover* one. To this end, they devoted themselves to sensuous observation, or rather, to observation of sensuous phenomena. They studied nature, collected and coördinated facts with the object of discovering truth, that is, of correctly interpreting phenomena. Theirs was not a system of guessing, but of demonstration. It did not comprehend unveiling the thing itself—the neumena —but of unfolding the order of its development. While their habit was to doubt, it was not to doubt the truth itself, but the knowledge of it, which their rivals claimed to possess. Beginning with matter, the sceptics sought to ascertain its primordial constituents and the laws of their combinations in entering into endless forms and conditions. With the mastering of those elementary subjects they were prepared to take a step in advance. From physical phenomena the ascent was easy to mental phenomena. The rational method may be said to have begun with the study of atoms, and to have advanced to the problems of spaces, motions, molecules, voids, worlds, bodies, souls, and finally

to the master-piece of creation, Mind. The genius of Democritus was equal to all this, or of initiating a method of philosophy that was equal to it. Fortunate for the glory of Aristotle, says Lefèvre, that his books have not come down to us! While it remained to the modern physicists to demonstrate the atomic constitution of matter, the first conception of the truth is due to Democritus. In his view, atoms were eternal, self-existent, indivisible, of divers shapes, motions and properties. Their diversified combinations and interactions constituted the varying forms and phenomena of the material world. "Atoms in motion and in space wherein they move," said he, in substance, "such are the sole and necessary conditions of existence of bodies and their properties. Matter and void make up the whole system." "Substitute for the void," says Lefèvre, "the imponderable ether, for the absolute the relative void, and one gets the very formula of modern physics and chemistry." * "Motion is the manner of being of matter," says Lefèvre; "it is at once the condition and effect of all atomic or molecular combinations." The various kinds of motion, though separate ideally from matter, science recognizes as "various aspects of matter, different states, more or less general, more or less particular." "The fundamental and often incomprehensible character of the most complicate aggregates," continues Lefèvre, "resides in the composition of the molecules, in the reciprocal proportions of the constituent atoms.†

* *Philosophy, Historical and Critical*, p. 85.

† *Ibid.*, p. 450.

The chief virtue of thinking is to think. It is not what a man believes, or what he thinks, what his opinions are, or how learned and luminous are his maxims that makes him of service to his race, and that greatly distinguishes him from his fellows. His power to stimulate the ideas of his fellows; to inspire them to think out their own conclusions; to direct their mental energies into fruitful channels—is of far greater consequence. To wield this influence requires honest convictions and the courage to express them. Democritus had these high qualities, and the world (although his books were destroyed by the vandals of philosophy) will not let his name perish. He must be accredited with the origin of inductive philosophy, to which medicine is so greatly indebted, by which Hippocrates worked out his renown and which Aristotle applied with such fruitful results a century later. This method of observation was allowed to lapse in the minds of men with the decline of the Alexandrian school, and its place to be usurped by its rival method, the ideal or mystical. The decadence of the old dynastics, followed by the rise of the new dispensation, during which mankind groped in darkness and blindly turned to authority and to oracles for guidance, or sought wisdom in dreams and dreamers, was death to philosophy. It was destined to rise again, however, and to take its high position in the new civilization, for

> "Truth crushed to earth shall rise again,
> The eternal years of God are hers."

Democritus, Leucippus, Lucretius, Hippocrates, Aristotle, Hipparchus, and their coadjutors thus laid the foundation of science on which the grand superstructure of modern science and art has been reared by their illustrious collaborators in the western world. To their faithful observation and conscientious study of nature are due the vast treasuries of knowledge, and the varied arts and industries of the civilized world. To them we are indebted for the magnificent discoveries in physics and the equally magnificent achievements in chemistry and mechanics; for the perfected astronomy of our day; for biology and anthropology, physiology and hygiene, pathology, bacteriology, ætiology and therapeutics, botany, materia medica, and even surgery. Without the discoveries in optics, minute pathology and of morbific causes, which have been made by students of inductive philosophy, following in the wake of their illustrious predecessors, medicine would have forever remained what it was in the last century, "a jumble of inconsistent opinions," and a reproach to the name of science. The discoveries in the various departments of physics, including inorganic chemistry, the advance in our knowledge of organic chemistry and of morbific causes; the discoveries in antiseptics and the laws of organic development have revolutionized the art of medicine within living memory, introduced certainty where before was uncertainty, and established beyond controversy its claim to the rank of a science. While the world owes so much to rational ideas and to the men who have unselfishly promulgated them

in the department of medicine and hygiene, it is even more indebted to them for the benefits which they have conferred upon other departments of knowledge and the application of science to the arts and industries. These have multiplied the comforts of life, enlarged man's understanding and increased his capacity for rational enjoyment a thousand-fold. Nor is this all: By enlarging the understanding of man, science has brought him into higher and closer relations with his fellows, and has led him into more exalted regions of thought and feeling, even to the height of contemplating "the beautiful and orderly laws by which the universe is governed." His nature is thus awakened to the diviner harmonies of being, and he is fitted thereby to render a truer and a more acceptable homage to the august source of life and being. No man who fully appreciates the revelations of natural science can be irreverent or irreligious. They exalt him above sordid things and prepare him to enter upon a life of sweetness and light—here, in the life terrestrial.

Modern students of psychology have accepted the justness of Plato's idea of dualism in respect of the constitution of matter. But the conception is only ideal—apparent, not real. And while the nature of either matter or mind still remains as one of the Elusian mysteries, it is conceded that we know as much of one as we do of the other. We know that matter and force are everywhere co-existent, and that one is the complement of the other, and as a matter of fact, the one is never dissociated or

separable from the other, except ideally. The deeper mystery which involves them both, science does not pretend to penetrate. Nor does theosophy. Some of the German idealists, notably Schopenhauer, have taken delight in vaunting the one above the other and giving mind the higher rank—or the only rank—in the system of causation; but it is a procedure altogether devoid of practical utility. We know that there are grades of matter as there are also grades of mind. The oxide differs from the acid, and these again differ from the salt; minerals differ from the vegetable, the vegetable from the animal, and one animal differs from another according to differences in form, atomic and organic combination and construction. At each grade of atomic combination in the mineral kingdom, and also in the vegetable kingdom, characteristic forces and properties become manifest, and at each step in the evolution of animal forms and types characteristic properties of tissue and types of life and mind are produced and made known. Every form of organic substance has its own peculiar property, or life-force. Thus: cellular tissue has one kind, muscular tissue has another, and the several kinds of nerve tissue have others, each according to its grade of development, the highest, the grey matter of the brain, being the instrument, or centre of the highest grade of mind, possessing the power of thinking, or of evolving will and ideas. It is certain that we know nothing of life and mind except as they are manifested in the various forms of substance, properties, organs and functions, with which they are associated and to which they are related.

We find in Mr. G. H. Lewes' *Physical Basis of Life* a luminous illustration of the part which tissues, organs and functions play in the animal economy, which he accredits to Bichat: "Let us suppose ourselves investigating the structure of a ship," he says. "We find it composed of various *materials*—wood, iron, copper, hemp, canvas, etc., and these under various *configurations* are formed into particular parts serving particular purposes, such as deck, masts, anchor, windlass, chains, ropes, sails, etc. In all these parts the materials preserve their properties, and wherever wood or iron may be placed, whatever purpose the part may serve, the properties of wood and iron are unaffected; and it is through a combination of these properties that the part is effective; while through the connection of one part with another the purpose becomes realized. The purposes to which masts, ropes or sails are subservient may be called their functions; and these, of course, only exist *as such* in the ship. It is the same with the organism. We find it composed of various tissues, and these are combined into various organs or instruments. * * * Each tissue has its characteristic quality; and the organ which is constructed out of a combination of several tissues, more or less modified, is effective solely in virtue of these properties, while the function of that organ comes into play through its combinations with other organs."* But it must be observed that, the power which presides over all and directs all to a

* Pp. 71-72.

definite end and purpose in the organism is something the nature of which is past finding out, inscrutable, namely, the Ego.

Moreover, few things in mental physiology which have not been absolutely established, are more certain than that every mental faculty, memory, reason, perception, imagination, intellection, motive, etc., together with the moral sentiments and the passions, has its own ganglionic centre in the brain, to which its exercise is limited and on the integrity of whose structure and function each mental trait is dependent. The truth of this is supported by experiments on living animals, as well as on man, by distinguished physiologists in France, Germany, England and in this country. The doctrine is also supported by mental pathology, the phenomena of partial idiocy and arrested development, as well as by actual disease of the brain-substance, that part of mind which is related to such diseased brain, being impaired or destroyed thereby. If mind were not immanent in brain-substance, or dependent upon it for existence and manifestation, the loss or non-development of that substance, or the disease or destruction of it, in whole or in part, would not necessarily impair the mental faculties. But the truth is that, such loss or destruction of brain substance, either by disease or otherwise, is immediately followed with loss or impairment of the mind. It has been proved over and again that the cerebra are the seat of intellection, by the removal of them from animals, idiocy following that operation, while the unconscious life continued to

remain intact. MM. Flourens and Bouillaud, Dr. Dalton and others, have repeated this experiment on birds, and always with the same result. Dr. Dalton says "the animal is still capable, after removal of the hemispheres, of receiving sensations from external objects. But these sensations appear to make upon him no lasting impression. He is incapable of connecting with his perceptions any distinct succession of ideas. He hears, for example, the report of a pistol, but he is not alarmed by it; for the sound, although distinctly perceived, does not suggest any idea of danger or injury. The memory is altogether destroyed, and the recollection of sensations is not retained from one moment to another. The limbs and muscles are still under the control of the will, but the will itself is inactive, because it apparently lacks its usual mental stimulus and direction." *

Moreover, the connection of consciousness and the brain is further strikingly shown by the fact recorded by Valentine, that "if one removes the two hemispheres of a mammal by slices, the mental activity sinks the lower the further the loss of substance is proceeded. When the ventricles of the brain are reached, complete unconsciousness is wont to appear." †

We have in the following pages of this volume elaborated the evidence in support of the doctrine of the unity of brain and mind and must not there-

* *Human Physiology*, p. 362.

† Von Hartmann. *Philosophy of the Unconscious*, II. p. 71.

fore forestall it here, but content ourselves with the simple affirmative that the facts are sufficient to settle the question in unbiassed minds, not of materialism or immaterialism, but of the mutual and interdependent relation of mind and matter, body and soul, the objective and the subjective, the material and the spiritual. This demonstration is the crowning achievement of modern philosophy.

Let us now turn our attention to the rival and opposite method of thought of which Plato was the chief exponent in Greece, although it did not, as we have seen, originate with him. With this method of investigation, "instead of referring the events of the external to space and time, to sensible connection and causation," says Dr. Whewell, "men attempted to reduce such occurrences under spiritual and supersensual relations and dependencies; they referred them to superior intelligencies, to theological conditions, to past and future events in the moral world, to states of mind and feeling, to the creatures of an imaginary mythology or demonology. And thus their physical science became magic, their astronomy became astrology, the study of the composition of bodies became alchemy, mathematics became the contemplation of the spiritual relations of number and figure, and philosophy became theosophy."*

The leaders of the ideal school subordinated matter to mind. Many of them went so far, indeed, as to deny the objective existence of the former and

* *History of the Inductive Sciences*, I., p. 211.

to treat its existence as an illusion of the senses. While Plato held to the doctrine of dualism in nature, physical and spiritual, Parmenides denied the reality of the physical world and the authority of experience. Gorgias believed the physical world to be an illusion, and that the only real existence was mind. "Nothing has any substantial existence," he declared. And so strong was his conviction of its truth that his friends felt constrained to protect him against accidents lest he should walk off a precipice, or be run over in the streets. Xenophanes and Pyrrho were imbued with a similar scepticism of realities, while the learned and eloquent Zeno denied the reality of motion. These notions seem absurd enough to one who accepts the authority of the senses for the evidence of objective existence; but they were legitimate to them, since they denied the objective and regarded *ideas* as the subtratum of real existence. They are of interest in this connection chiefly as being the forerunner of that school of mysticism and folly which succeeded the decline of the Alexandrian school and Greek science in the second century of the Christian era, under the name of Neo-Platonism, which was the beginning of what is now known as "Christian science," the revival of which so many earnest and devout people are rejoicing in to-day.

The best representative of this sect and philosophy, or absence of philosophy, is Plotinus, himself a disciple of Ammonius Saccus, who lived at Rome in the reign of Claudius, in the second century. To his pupil, the learned and pious Por-

phyrus, are we indebted for an account of his life and mythical philosophy. "He lived a life of meditation, gentleness and self-denial," and in close communion with the divine Mind, according to his biographer. His idea of the relation of the intelligible world with the world of sense, the spiritual with the sensible world, is similar to Swedenborg's doctrine of Correspondences. Plotinus bewailed his mortality, or as Porphryus says, "he appeared like a person ashamed that he was in the body. In consequence of this disposition," continues Porphyrus, "he could not bear to talk concerning his family, or his parents, or his country. He would not allow himself to be represented in a painting or statuary."

Plotinus and his followers converted the abstract or subjective into real substantives. Thus, ideas were things, thoughts were entities, the divine influx was the "Word," or God himself, according, also, to St. John and Swedenborg. The passions of our nature were demons. These demons could be rendered latent, revivified, or exorcised at will, not only by the person acting upon himself, but also by the mind ot one person acting upon another, as in the practice of Christian scientists of to-day, exorcising the thought or idea of disease, which they allege is the disease itself. The Neo-Platonists, and later the Christians, carried these mythical doctrines to the extremest lengths. Not only did they materialize ideas, passions and sentiments, assume power over disease and evil spirits, but they professed to have power over the elements, to control physical

phenomena, and even to have power over life and death, like the Fakirs or Mahatmas of India to-day. Thus, the divine Nazarene, it is said, walked on the Sea of Galilee by his power to suspend the law of gravitation, quieted a storm at sea by his word of command, cured a woman of chronic issues of long standing, who had vainly suffered many things from many physicians, by his spoken word, and raised Lazarus from the dead, even after putrefactive changes had taken place in his body. But Sopater, who had the misfortune to live in the reign of Constantine, was beheaded by that monarch for presuming to exercise similar powers—for having "bound the winds by the power of his magic!" The great exemplars of this sect professed to live on terms of familiarity with the Deity, to converse with the dead, the gods Apollo and Minerva, and to hold communications with ghosts and apparitions. This was said of Iamblichus, Orpheus, Proclus and others who lived in the beginning of the Christian era, and who were among the most conspicuous of their sect. They were men of austere lives, of undoubted piety, pure habits, and of the strictest devotion to religion and the service of God. That they were sincere is unquestionable; that they were insane is equally beyond question, for the things they professed to do and believed that they did do were of such a miraculous character as to be beyond the credibility of the rational sense.

These doctrines were believed and taught by numerous mystics and ascetics of the mediæval period, fit philosophy for the "Dark Ages," and by

idealists since the Reformation, notably Leibnitz, Novalis, Kant, Schelling and Schopenhauer among the Germans, and Swedenborg, the Swedish Seer. Swedenborg attempted to reverse the order of natural development, and to put that first which had been regarded last in the causation of things. Paul of Tarsus wrote, "first the natural, then the spiritual." Sweden's Seer said, first the spiritual, then the natural. To him, physical nature was a reflex of spiritual nature, just as shadow may be regarded as a reflex of reality, or as a picture is the reflex of substance, only in this case, the shadow is the substance. "The natural world and all that belongs to it," he observes, "exist and subsist from the spiritual world, and both from the Divine." This idea runs through all his system of Correspondences, the key to which the author found on the occasion of one of his trips to heaven, if what he alleges is true. Whoever is able to accept the doctrines of Swedenborg will find no difficulty in accepting the ideas and beliefs of the most ultra mystics and sorcerers of Egypt, India, or of Christianity of the early mediæval period.

The Neo-Platonists, including those who believed in the reality of matter, believed in the absolute power of mind over matter. Inanimate objects were subordinate to their will. The power of faith was invincible. Did not the divine Jesus declare that if one's faith was sufficient the mountains could be cast down at one's command? They claimed that they could handle live coals and swallow deadly poisons with impunity; that they could contend

with wild beasts, defy the bite of serpents and the sting of scorpions and other poisonous insects. They, especially the Christian sect, accordingly ignored and despised the art of medicine and declared the inutility of physical science or worldly learning. They instituted faith cure, shrine cure, cure by charms, etc. The chief object of this life with them was to prepare for the life to come. The more suffering and privation they endured in this world, the more bliss would be their portion in the next. The effect of such a conviction was to give them contempt for riches and the comforts which riches bring. And of what good use was worldly learning to men imbued with such unworldly zeal? Of the physical philosophers, Eusebius of the fourth century said: "It is not through ignorance of the things admired by them, but through contempt of their useless labor that we think little of these matters, turning our souls to the exercise of better things." Lactantius, of the same period of the Christian era, expressed his contempt of learning and philosophy in language still more forcible: "To search for the causes of natural things; to inquire whether the sun be as large as he seems; whether the moon is convex or concave; whether the stars are fixed in the sky or float freely in the air; of what size and what material are the heavens; whether they be at rest or in motion; what is the magnitude of the earth; on what foundation it is suspended and balanced;—to dispute and conjecture on such matters is just as if we chose to discuss

what we think of a city in a remote country of which we never heard but the name."*

From the general prevalence of sentiments like these, one can easily imagine to what depths of ignorance and superstition the masses of mediæval Christendom fell, and to what dire straits of disease and misery they became reduced. Imagine a people who never bathed themselves, and lived on cheap fare, or a diet of refuse; imagine a person sick with specific fever whose only treatment was annointings and prayers; or with rheumatism, treated with charms; imagine a case of leprosy treated by silent prayers and meditations, or of diphtheria by laying on of hands; imagine cases of ulcers and issues, abscesses and cancerous sloughings treated by pious processes without water and antiseptics, as was customary among the early Christians and as the modern imitators of mediævalism, under the specious guise of "mental science," advise and practice—and the sanitary condition of mediæval Europe may be easily imagined. It was a mercy of Heaven that the people lived out half their natural lives, and that nothing worse than superstition, the "King's evil," lice, leprosy and the plague was inflicted upon them.

It is remarkable how history repeats itself, and ideas rise and fall, come and go, and are revived with the ever-changing ebb and flow of human opinion. It has been assumed and believed that some stable and substantial progress had been made in the

* Inst. I. iii. See Whewell's *History of the Inductive Sciences*, I., p. 195.

knowledge of the laws of health and sanitary science; that the physiologist had settled a few questions in regard to the laws of organic life, of digestion and formulas of diet, morbific causes, etc., and was in a position to affirm this and to deny that, in respect of what is good and what is bad for persons in one condition or another. The mental therapeutist of this class would have us believe that the profession has been in error in such an assumption. The power of mind, reënforced by the rites of religion and the doctrines of theosophy has superseded rational therapeutics and the laws of sanitary science, and rendered unnecessary the practice of ordinary prudence in the care of our bodies—at least, if the claims of the doctrinaires of the new theosophy are entitled to respect.

Again, diseases being a spiritual disturbance, the causes of them are likewise spiritual, say the advocates of the modern Neo-Platonism. Swedenborg distinctly declares that the causes of all coughs, fevers, inflammations, cachexias, etc., are due to the presence of "evil spheres,"and not to epidemy, extremes of heat and cold, or to bacteria, or other physical causes. "When evil spheres approached him" Swedenborg was alleged to have been seized "with violent fevers, pains, inflammations, etc., varying with the nature and intensity of the sphere. When the sphere was removed all the bodily disturbances at once passed away, as the shadow vanishes when the substance is displaced." Acting upon this fanciful, not to say irrational suggestion of Swedenborg, the disciples of "mental science" proceed to cure disease

"by ejecting the evil sphere, when all its projected shadows fade and disappear." They assert that morbific causes are of mental or spiritual origin, and that, therefore, the radical cure or elimination of them can only be accomplished by the practice of virtue and the generation of pure thoughts and living sweet lives. "If the whole world," says the excellent author of *Condensed Thoughts about Christian Science*,* "could be made and kept by our sanitarians as clean and pure as the floors of heaven, human nature and life remaining the same, every disease now existing would be reproduced from interior sources during a single generation. On the other hand, if all men could be brought, from the stand-point of absolute truth, to think rightly, feel rightly, and do rightly, it would revolutionize the face of nature, and physical disorder and disease would be impossible." This is a condensed statement of the issue between the philosophy of Democritus, Aristotle, Hippocrates, Avicenna and Bacon, and the theosophy of Plotinus, Porphryus, Schopenhauer, Van Helmont and Swedenborg.

It is idle to indulge in a method of reasoning which has no predicate in observed data. No substantial progress in knowledge was made until man turned away from the lead of the intuitions and began to acquire and to coördinate facts from which to draw conclusions. To turn away from this method now would be to turn back the wheels of progress. Facts are to philosophy what evidence is to courts

* W. H. Holcombe, M. D.

of law. When the facts of the Cosmos are all in,—the evidence made up, then, and not till then, will the reason be able to draw correct conclusions in respect of the various problems of mind and matter about which there is so much confusion in the minds of men to-day. Nothing can be gained by assuming the primacy of spirit over matter, or of matter over spirit, for of a truth, we know no more of one than we do of the other. Nor do we know that they are separable or distinct, the one from the other. If we assume that they are separable, it is not too much to insist that their nature and constitution are involved in a mystery which lies beyond the ken of finite faculties. If we assume that they are not separable, but different states of the same substance, the mystery is by no means cleared, but rather deepened thereby. The reflective mind is, indeed, awed into silence in the presence of so sublime a mystery as that presented by Matter, Life and Mind.

PART I.

MATTER, LIFE AND MIND.

"Les phénomènes vitaux ne sont pas les actes d'un appareil déterminé et particulier, ce sont des résultantes qui résument l'ensemble des phénomènes de la matière vivante et tiennent à la totalité des conditions de l'etre organisé."—*Vacherot.*

"On one side we have mind; on the other side we have matter. These two principles are so interwoven, they so act upon and disturb each other, that we shall never really know the laws of one unless we also know the laws of both. Everything is essential; everything hangs together, and forms part of one single scheme, one grand and complex plan, one gorgeous drama of which the universe is the theatre."—*Buckle.*

PART I.

MATTER, LIFE AND MIND.

SCIENCE advances by slow but no uncertain process to the classification of all phenomena and the demonstration of the order of their procession.* Its domain is not confined to inductions respecting matter and force, the material substances and "properties" of nature; nor to life and its correlative forms; but it includes the phenomena of mind, and the complex relations of human beings—social, religious, theological, political—all phenomena that can be classified and arranged into intelligible form and logical coherence. According to this view, everything subject to observation falls within the province of science. The request of the adherents of antiquated hierarchies, that science should keep within its proper limits of research and observation, and leave religion to the ecclesiastics, is altogether out of place, since its sphere is boundless; and where science may not reach there is nothing but sheer emptiness.

* Toute science consiste dans la coördination des faits; si les diverses observations étaient entièrement issolées, il n'y aurait pas de science.—*Philosophie Positive*, Vol. I., p. 131.

It may be further observed that a department of study which was confined, even among the Greeks, to the phenomena of mentality is, in these latter days, being extended to a philosophy of the invisible, everywhere. Whereas, formerly, the term psychology, for example, was used to interpret and signify the attributes and characteristics of living beings, its use has ceased to be thus restricted; and in this respect, if we mistake not, the modern conception is equal if not superior to the conception of the ancient Greek, even to that of the divine Plato himself. It has come to be no misapplication of the term to say "natural psychology," "morbid psychology," "medical psychology," "comparative psychology," etc., etc. Since there are two sides to nature, an objective and a subjective side, and two aspects from which to view phenomena, cause and sequence, the one visible, the other necessarily invisible, matter itself has a psychical as well as a physical aspect, and possesses, therefore, a psychology of its own. There is, then, a psychology of matter, embracing the principles by which it moves and moulds itself into the countless forms of substance—living, moving, thinking beings. The necessity of bearing always in mind, moreover, the distinction of *subject* and *object*, which is a purely mental one—for the observer's convenience, not nature's—cannot be too strongly insisted upon. All nature is essentially and always a unit, one and indivisible in fact, and it is a procedure wholly gratuitous to attempt to cut her in twain. The late G. H. Lewes has well said that "the *subject*

is inseparable from the *object* in any real sense; is only separate ideally. As the flower which comes into existence through the action of the sun incorporates the energy of the sun, and grows by what it takes from the sun, so the sentient organism incorporates the energy of the external, and reproduces all that produced it." *

In respect of the term *Law*, as used to explain and interpret phenomena, we observe that it is highly illusory. To say, as does the modern scientist, as does almost every one, that the universe is under law, is to say that which has no meaning in the absence of an exposition of what law is. It is more than this; it is, in such sense, misleading, for law is not an agent, but a conception, an intellectual summation in respect of the order of things. Mr. Lewes correctly defines law as "the process of phenomena, not an agent apart from them; not an agency determining them, but simply the ideal summation of their positions." † The procession of events transcribes the law which underlies them. If this view be correct, the law of any series of events is deducible from their procession. All phenomena, therefore, make their own laws, or afford the mind the elements or data from which to deduce them. If one goes back of this and inquires after the final cause of phenomena, he will be forced to conclude, as does Despine, that it is "La volonté du Créateur," ‡ which is simply an

* *Problems of Life and Mind*, Vol I., p. 174.

† *Ibid*, p. 283.

‡ "Elle rattache, par la connaissance des lois naturelles, les

all-powerful creative purpose in the constitution of things, not more manifest in material phenomena than it is in social and psychical.

I. Two facts have been recognized in nature from time immemorial, which may be regarded as fundamental, viz.: Matter and force. Excepting the chemical mystics—the Van Helmonts, who sought to transcend the ordinary processes of nature, and to do in physics what the monks professed to do in psychiatry, and by a similar prowess—physicists were universally agreed in respect of the nature of one and the agency of the other. Matter has been generally regarded as having a fixed, definite, stable constitution, and as consisting of two fundamental kinds, organic and inorganic; the second, existing under the exclusive dominion of the laws of physics: the first, rising superior to those laws, by virtue of some superposed quality and controlled, in defiance of them, by the laws of organic life. Chemists applied themselves with commendable industry to discover and classify the primordial elements, and to find the probable limit of their divisibility. One by one these elements have been discovered, defined, measured, weighed, and duly labelled. Each was presumed to possess an atomic constitution of definite shape, size and property. Experiments with the molecule demonstrated be-

efforts à leur cause première la volonté du Créateur qui a fait ces lois. Pour nous, comme pour la plupart de ceux qui les emploient, les expressions: *Nature, des lois naturelles*, n'ont pas d'autre signification."—*Psychologie Naturelle*, Tome I., p. vi.

yond conjecture that it was "endowed" with molecular force. The forces identified with certain forms and states of matter were looked upon as something foreign to it—*properties*—of which matter could be conceived as existing independently. Thus the latter was regarded as essentially passive, moving only as moved, subject wholly and passively, like an automaton, to influences from without; having no agency in a world of never-ending work and activity, except to play a prescribed and subsidiary part. Thus were the atoms regarded by those supposed to be most familiar with nature, as not altogether unlike the stage-boys in the play, arranging the scenes and fulfilling such other prescribed functions as were necessary to keep up the illusion and perfect the display.

Such a view of the nature and offices of the fundamental atom—of "crude" matter—is prevalent today in well-known circles. Thus says the late Dr. W. B. Carpenter, the physiologist: "The existence of matter is essentially passive. Left to itself it always impresses our consciousness in one and the same mode, and any change in its condition is the result of external agency. What have been termed," he continues, "the active states of matter are really the manifestations of *forces*, of which we can conceive as having an existence independent of matter, and as having no other relation to it than that which consists in their capability of changing its state."* This conception of matter was given to

* *Principles of Human Physiology*, (third American edition,) p. 541, 1856.

the world by him two scores or more of years ago, since which time an enormous stride in physical discovery and philosophical thought has been made. Lest we do the distinguished author injustice, therefore, we cite what he said on the same subject in 1874: "It is now generally admitted," says he, "that we neither know, nor can know, anything of matter, save through the medium of the impressions it makes on our senses; and these impressions are only derived from the forces of which matter is the vehicle. . . . There seems valid ground for the assertion that our notion of matter is a conception of the intellect, force being that externality of which we have the *most* direct—perhaps even the *only* direct—cognizance."*

After this brief lucid interval, however, in which the author seems to comprehend the subject, he lapses into his old "automatic" *habit* of thought, and repeats his former dictum in regard to the passivity of matter in the same terms, only adding: "All its *activities* are manifestations of the *forces* of which it is the vehicle, and to the exercise of which all the phenomena of the material universe are due."† This will suffice. In claiming for himself an ability to conceive the existence of matter dissociated from force, the learned physiologist is happy in the possession of an imagination rare among his coadjutors in physical science.

Gaudin calls to his aid, in constructing organic

* *Principles of Mental Physiology*, p. 11, 1874.

† *Ibid.*

nature, an all-powerful Creator: "La structure des composés chimiques," he observes, "n'est soumise qu' à la loi mathématique, tandis que, dans la matière organisée, la loi mathématique a été éludée. Dans les germes et dans leur produits, il existe un manque de symétrie dans l'axe qui dénote une intention formelle, ou pour mieux dire, une toute-puissance Créatrice."* We fail to see, however, wherein the agency of an all-powerful Creator is more manifest in organic than in mathematical or inorganic forms of matter. The skill displayed in the growth of a flower may be of a higher order than that displayed in the crystal; but each is perfect in its way, and discloses the hand of the same Master, albeit one is simple while the other is complex. The mathematical power or faculty is not inferior in grade to that of drawing and designing. As the mathematician takes high rank in the scale of mentality, it is surely illogical to underrate the mathematical status of that genius which crystalizes the rocks and engineers the architecture of the earth and heavens.

No student of physics was bold enough, prior to the invention of the spectroscope, to challenge the absolute correctness of such views of matter as we have presented, or to doubt the exhaustive nature of the means and methods used and pursued in their demonstration. Nor were they regarded as materialistic. Dissenting views were by no means wanting—but they were those of the inspired poets

* *Architecture du Monde des Atomes*, p. 3.

and divinely mad men, whose authority on such subjects was naturally of small value. Thus, Goethe, in *Faust*, not inaptly describes matter as the visible garment of the Infinite:

"'Tis thus at the roaring loom of time I ply,
And weave for God the garment thou seest Him by."*

Suffice it to say, in passing, that these very crude and simple interpretations of physicists of the elements of nature, are by many regarded with dissatisfaction, if not with dissent. They have measurably ceased to command the assent of their former advocates and promulgators—the physicists. Indeed, the more eminent of these stand in reverent awe, more truly spiritualistic than the spiritualists, in the presence of the strange phenomena exhibited by the molecule, freely acknowledging that the nature of the molecule is inexplicable; that the mystery which enshrouds its constitution is as impenetrable as that of "spirit" itself. The activities of the molecule—of "gross" matter—are in fact as incomprehensible as fear, love, hope or hate. Nor are they less spiritual or more material than those of any of the emotions. The geometric forms of the molecule; its strong preference for, or dislike of, certain other molecules; its attractions and repulsions; its strange transformations and metamorphoses under the influence of light and

* The following is the original of the passage:

"So schaff ich am sausenden Webstuhl der Zeits,
Und wiche die Gottheit lebendiges Kleid."

heat, are all impressive mysteries which transcend finite comprehension and bewilder the reflective observer. The modern prince of materialists is justly confounded by them, declaring that, in his opinion, that which the builder in physical philosophy rejected has become the corner-stone of the structure; that, in other, and less metaphoric terms, matter—the inert, hard, impenetrable atom of the former physicists—"possesses the promise and potency of every form of life." * And another *savant* and *littérateur*, whom no one has ever accused of orthodoxy, declares that "matter ceases to be an alien, ceases to have the dead, unspiritual character, when we learn that everything we can possibly know of it is one of the many modes of feeling. All our knowledge of it is the knowledge of our own affection." †

To one who has broken away from the old idea of matter and force, which conceived of life and matter as being in open warfare, and has come to view nature as a series of harmonies, ascending without hindrance to one grand consummation, matter appears altogether in a new light—impresses one with altogether different meanings. The supposititious conflict merges into harmonious coöperation; it ceases even to be a "conception of the intellect." Thus says Mayer, matter is "tout ce qui peut être converti en mouvement."

* Professor Tyndall's *Address before the British Association* at Belfast, 1873.

† Lewes' essay on *Spiritualism and Materialism.—Fortnightly Review*, April, 1876.

And the lamented M. Papillon's idea of it, while even more comprehensive than Mayer's, has the still greater advantage, in our view, of being scientifically exact. He writes: "La matière est donc tout à la fois forme et force, c'est-à-dire qu'il n'y pas de différence essentielle entre ces deux modes de la substance. La forme n'est que de la force circonscrite, condensée; la force n'est que de la forme indéfinie, diffuse." *

But we cannot linger among the atoms. Enough has been said to disturb the reader's complacency as regards his knowledge of matter, and that is sufficient for our purpose. Hurrying across the mythical chasm which separates the visible from the invisible in nature, and entering the domain of that other mystery in nature, the force-world, we find views equally vague, uncertain and conflicting, respecting the nature of life and its correlative, mind. They to whom the world has looked with confidence for an authoritative interpretation of that which is apparently the most familiar object in nature—life—are found to disagree irreconcilably. It is true that early in the present century, some of the French, German, and English savants, notably Cuvier, Magendie and Bichat, advanced doctrines respecting the nature of life which subsequent demonstrations in physical science, while proving them to be erroneous in fact, have shown to be in the direction of truth. It is needless to say, however, that their doctrines were but rarely entertained by

* *La Constitution de la Matière.—Revue des Deux Mondes* Tome, CV., p. 698.

physiologists; the drift of physiological sentiment being to exalt all forces into entities, separate and distinct from forms of matter in connection with which only they are observed. The attempt to identify life and mind with matter, other than as an *agent* of organization was, until quite recently, within the memory of this generation, looked upon as a heresy of a forbidding sort, and produced no little discord and ill feeling in the ranks of physiologists themselves. One class was designated chemico-physiologists; the other, vital-physiologists. Much "vital" energy has been spent by each party in support of its favorite doctrine with results favorable to both, we believe; since between them the truth, which must have otherwise remained unknown, has been approximated.

Those who regarded matter as not living, as something altogether passive in the construction of the world, found it necessary to *invent* a principle of motion and energy to account for those changes in organic matter which were daily occurring before their eyes. It did not occur to them to question the truth respecting the assumption of *dead* matter, or the divisibility of matter and force. Either proposition was a fact supported by the direct evidence of the senses, which it would be idle in their view to impugn, though psychical studies have shown that nothing is more misleading than evidence derived from such a source. It was easier to satisfy the logical mind, and reconcile seeming fact with nature, by assuming the existence of a living force in temporary occupancy of organic matter, a some-

thing superposed upon the original elements, and using the latter as its instrument. This principle was variously named by the metaphysicians of the seventeenth and eighteenth centuries, "vitality," "animal spirits," "soul," etc. Stahl, of the seventeenth century, boldly declared that the principle of organization was no other than the soul. "The body as body has no power to move," said he; "it must always be put in motion by an immaterial principle. All movement is immaterial and a spiritual act." * Dr. Erasmus Darwin, the grandfather of the late Charles Darwin, the eminent naturalist, in his *Zoönomia*, maintains a similar doctrine: "The whole of nature," he writes, "may be supposed to consist of two species or substances; one of which may be termed spirit, the other matter. The former of these possesses the power to commence or produce motion, and the latter to receive or communicate it: so that motion considered as a cause immediately precedes every effect, and considered as an effect it immediately succeeds every cause." † Dr. Whytt, a medical author of some note of the last century, advanced similar doctrines respecting the cause of living actions; but spirit, in his view, operated "by the intervention of something in the brain and nerves." This mysterious "something" was, at a later day, supposed to be "animal spirits." And many eminent medical men, as Barry, Mead, Fleming, and others, went so far as to describe the

* *Théorie Medicale.* Cited from *History and Heroes of Medicine.* P. 280.

† *Zoönomia.* Vol. I., sec. 1, p. 5.

precise nature and composition of that peculiar substance. Thus: "The nervous fluid, or animal spirits," says Fleming, "consist of phlegm, or water, oil, animal salt and earth; these are highly attenuated and subtilized, and intimately mixed and incorporated together."* The strange doctrine of *animal spirits*, as the physical basis of life, was long since abandoned; while its notable synonym or correlative, the *nervous fluid*, is still retained by many as a convenient and practicable medium of communication between body and mind.

Cullen's idea did not differ essentially from this. He looked upon life as something analogous to electricity, when that force was almost universally regarded as a *fluid;* existing, like electricity, in a state of latency in some bodies, and capable, like it, of being *excited* into activity by appropriate stimuli. "So, in our medullary fibre," he observes, "there is a fluid which was present in the germ, but was not excited; and it is in the excited state of this, that I suppose life to consist; and when it is no longer excited in any degree, we call it the state of death."† It is worthy of note that these views of life, so crude and materialistic, did not subject their authors to the charge of materialism.

Such an hypothesis upon such a subject, put forth by a man of such acknowledged learning and ability as Cullen, gives one some idea of the immense stride rational philosophy has taken within the present century. Dr. Russell of England

* *Fleming's Nervous Fluid*, p. 24

† *Physiology and Nosology*, Vol. 1, p. 131.

quotes this observation of Cullen with an air of approval, and remarks that "Life consists, according to this view, of a force generated in the nervous system and diffused through the animal frame, just as electricity pervades inorganic bodies; the quantity of this vital force varies according to certain conditions, and the knowledge of those conditions will enable us to explain, as well as to obviate, morbid action."* Perhaps so; and yet how, upon this hypothesis of vitality, one is enabled to differentiate the life-force of a vegetable, or to distinguish it from that of an animal, or from that of different animals, and to conceive the necessity of any one's dying when electricity is so plentiful and easily obtainable, are problems by no means easy to solve. It is still more noteworthy, however, that the author adheres to the hypothesis of *vitality*, seemingly oblivious of the fact that the discovery of his countryman, Professor Grove, of the correlation of the physical forces, has already rendered that hypothesis altogether untenable—placed it on the retired list among the curiosities of medical theories. Professor Huxley characterizes the doctrine of a vital principle as the "Asylum ignorantæ of physiologists, which has so easily accounted for everything and explained nothing down to our own time."†

We have already alluded to M. Cuvier and others of the French school of the present century, as promulgating views of the nature of life in advance

* *History and Heroes of Medicine*, p. 328.

† *Address on the Biological Sciences* before the *International Medical Congress.* 1881.

of their contemporaries. That eminent naturalist recorded his conception of the life-force as follows: "Dans chaque être, la vie est un ensemble qui résulte de l'action et de la réaction mutuelle de toutes ses parties."* Bichat's, the equally eminent physiologist, definition, although that of M. Cuvier must have been known to him, is less lucid: "La vie est l'ensemble des fonctions qui résiste à la mort."† Lawrence, an English physiologist of good repute, and a contemporary of Bichat, defined life as follows: "Life is the assemblage of all the functions (or purposes) and the general result of their exercise."‡ A literal translation of that of Bichat is preferable, though both definitions are obviously defective.

Coming down to more recent times, we find Dr. Whewell formulating his definition on the subject: "Life is the system of vital functions."§ Had he said the vital function is life, the observation would have been equally exact. More recently still, Mr. Herbert Spencer has declared that "Life is the continual adjustment of internal relations to external relations."‖—a definition hardly in keeping with its author's usually clear insight. The adjustment and maintenance of harmony throughout organic nature is doubtless due to the agency of the life-force and its correlations. It is a manifest error,

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* *La Règne Animal*, Tome I^er^, p. 16.

† *Recherches Physiologiques Sur la Vie et la Mort*, Art I^er^.

‡ *Comparative Anatomy and Physiology*, p. 129.

§ *History of Scientific Ideas*, Vol. II., p. 98.

‖ *Principles of Psychology.*

however, to suppose that the maintenance of that harmony is life; it is rather the *effect* of life. A juster doctrine is that maintained by M. de Candolle, a French savant and writer, who declares that "Life is the transformation of the physical or chemical motion into plastic or nervous motion."* This definition, however, is not wholly consistent with the facts of nature and scientific induction. Life is manifested in the vegetable kingdom, and also in animal forms too low in the scale of organizations to possess even the rudiments of a nerve-cell, much less of a nervous system. Hence, it is obviously impossible that such forms of matter should be able to transform physical forces into nervous force. They are wanting in the necessary apparatus. And yet they manifest what is called *life*, viz.: the organic agency. The definition of M. de Candolle would hold good in respect of the nature of mind; it is too broad and sweeping for that of life. We would limit it thus: Life is the correlation of physical force into organic force. Life is a sequence of organization, or, at least, coincident with it. Mr. Lewes expresses the relation thus: "Life is not an entity but an abstraction, expressing the generalities of organic phenomena." And again, "Mind is only one of the forces of life." † Descartes' view of life was more materialistic:

"I shall try to explain our whole bodily machinery in such a way that it will be no more necessary

* *Histoire des Sciences*, p. 457.

† *Problems of Life and Mind*, Vol. I, p. 106.

for us to suppose that the soul produces such movements as are not voluntary, than it is to think that there is in a clock a soul which causes it to show the hours."*

Professor Huxley, in the address before quoted endorses the opinion of Descartes to a certain extent, and observes: "In fact, the body is a machine of the nature of an army, not of that of a watch, or of a hydraulic apparatus. Of this army, each cell is a soldier, an organ a brigade, the central nervous system headquarters and field telegraph, the alimentary and circulatory system the commissariat. Losses are made good by recruits born in camp, and the life of the individual is a campaign, conducted successfully for a number of years, but with certain defeat in the end."

The phenomena of life are known only in connection with certain *states* of matter. Nor can the forces which the phenomena of life represent be conceived as existing independent of those states or without their agency. The doctrine enunciated by Dr. Brown-Sequard, that each tissue in the animal economy correlates life-force peculiar to itself,† is a legitimate outcome of the discovery, or rather demonstration, of Professor Grove, that all the physical forces are mutually convertible—a demonstration which marks an era, not only in so-called physical philosophy, but in psychological philosophy also.

In respect of the nature of mind our logic has al-

* *De la Formation du Fœtus.*

† *Vide* his *Lecture on the Nerve-force*, Boston, Mass., February 25, 1874.

ready betrayed the conclusions to which every rational man must come who accepts the premises. The tendency of physical discovery is to break down the time-honored distinction between matter and spirit, and to end the short-sighted and ill-natured controversy between truth-loving men respecting the relative merits or demerits of materialism and spiritualism, by confusing the meaning of their respective terms. Since matter and force are essentially one and the same, the one made visible and each made mutually known by the other; and since, also, the same remark may be as truly affirmed of life and certain states of matter, so likewise one may assert with equal propriety, and on grounds equally tenable, the essential identity of mind and matter—or mind and brain, which is the same thing; in the same manner, and no less so, than is the molecule and affinity one and indivisible. According to this view the lower nerve-tissue transforms chemical force into motion and sensation; the higher nerve-tissue, the grey substance of the cerebrum—and we believe that of the spinal marrow also—transforms the same material energy into thought and feeling.

Dr. Brown-Séquard in the lecture on the nerve-force, to which we have already referred, maintains that the transformation of nerve-force into motor-force takes place at every moment of our lives. Had he said that the chemical elements were transformed, or metamorphosed, into nerve-tissue "every moment of our lives" his auditors would have been less skeptical of the statement, but its meaning and significance would have been substantially the same; for

that, also, is what "takes place every moment of our lives." The one is psychical; the other is physical. The one is apparent, the other is less apparent, but not the less real. Every act, no less every thought, is attended with consentaneous changes in the nerve-substance; and it is idle to speculate on the question which precedes and which follows, for one is essential to the existence of the other. Dr. Brown-Séquard believes that light can be correlated directly into nerve-force, although "it is not distinctly proven yet." The proposition is highly probable. Indeed, there is no rational doubt but that the two forces are mutually convertible; and it is the absence of this doubt in the mind of an eminent astronomer, that leads him to affirm in such positive terms that "every form of force upon the earth, every action that we perform, all the forms of force we know of, even the thoughts we think, may be said to come from the sun."* And yet, the elementary constitution of the sun, if the revelations of the spectroscope are to be received, differs in no wise from that of the earth, except that its atoms are in a state of incandescence.

M. Papillon, in the fine essay on *La Constitution de la Matière*, from which we have before quoted, has given a definition of mind so entirely consonant with the present attitude of scientific thought on the subject, that we give it in his own language: "La pensée humaine est le résumé de toutes les énergies de la nature, puisqu'elle les assimile toutes, en les distinguant, par le travail qu'elle opèra sur les sen-

* R. A. Proctor, *Lecture on the Sun*, New York, Jan. 8, 1874.

sations.* And elsewhere in the same essay, the writer elaborates the idea and applies it to the interpretation of the phenomena of organic life. We quote a brief paragraph:

"Une première vue de monde exclusivement analytique, nous à conduit à une premièrе at indéniable certitude, l'existence d'un principe d'énergie et de mouvement. Une seconde vue de l'univers, exclusivement synthétique, nous conduit, comme on vient de la voir, à une seconde certitude qui est l'existence d'un principe de différentiation et d'harmonie. Ce principe, c'est ce qu'on appelle l'esprit. Aussi l'esprit n'est pas le substance, mais il la loi de la substance. Il n'est pas force, mais il est le révélateur de la force. Il n'est pas la vie, mais fait valoir le vie. Il n'est pas la pensée, mais il est la conscience de la pensée."

This young writer had evidently little faith in the absolute verities of chemical science and even doubted the competency of that science to deal exhaustively with the elements with which it is most familiar. "Quand on voit," writes he, "les même élémens unis dans les mêmes proportions de poids, donner lieu tantôt â des matières innocents, tantôt a des poisons terribles, engendrer dans un cas des produits incolores ou pâles, dans l'autre des couleurs brillantes, on acquiert la conviction que l'étoffe primordiale est peu de chose à côté de la puissance du tisserand qui en arrange les fils, et qui sait d'avance quelle sera la physionomie de la trame."†

* *Revue des Deux Mondes*, Tome CV., p. 705. *Ibid*, p. 706.
† *Revue des Deux Mondes*, Tome V., p. 702.

In matter we have, therefore, the foundation of a true psychology, paradoxical as the statement seems. In the study of chemistry and physiology, of pathogeneses and chylo-metamorphoses, but one side of nature, the physical, is discovered; the other, and most important side, is skilfully concealed from the sensuous observer, by terms which express facts without uncovering their significance; such, for example, as crystallization, affinity, catalysis, or "the action of presence"; coördination, reflex action, habit, automata, and that famous hobby of Dr. Carpenter—"unconscious cerebration"—on which so many physiologists have ridden into notoriety; terms well enough in themselves, and which mean a great deal, or nothing, according to the mental training of the observer. To him who can discern the other side of nature, the terms are pregnant with profound meaning. Physical and psychical are complements of each other. Law becomes the will of Omnipotence, directing and controlling the course of phenomena. He is conducted by the phenomena of nature into the realm of an awful mystery; into the very ways and thoughts of the Infinite. Crude nature becomes to him one vast laboratory, in which concealed but cunning hands work the divinest mysteries. Every molecule goes to its appointed place and fills its allotted sphere as by Supreme direction. The little atoms lose, for the time being, those "properties" of which many observers have boasted that they could conceive "as having an existence independent of matter;" and appear, when incandescent, like mathematical points, as they really are,

all aglow with celestial flame. Even the hard, impenetrable solids glimmer with crystal light. One feels even in the presence of the phenomena of the laboratory like uncovering and taking off one's shoes. The crudest elements of earth, in the presence of their affinities, seem radiant with life and animate with purpose. In view of these things it is no wonder that he who lived and worked so long in the chemical laboratory, in the very presence of the majesty of molecular mysteries, should have grown learned and reverent as he grew old, without the aid of the schools, religious symbols, or the sacred pen-works of antiquity. He, Michael Faraday, to whom we refer, with his crucible and re-agents, chemical and electrical apparatus, lived and communed with the Divine daily, and on terms of greater intimacy than did Enoch of old, or Moses in the light of the burning bush amid the thunders and lightnings of cloud-capped Sinai.

II. The unity of matter and force implies the unity of body and soul. And it is interesting to observe that while physiologists are agreed as to the unity of the physical being—the purely animal existence—they are divided as to the unity of the corporal and mental life. Hence, the distinction that has been drawn, and continues to be maintained, between man physical and man psychical. The objection we urge against the doctrine of duality of inorganic matter is equally valid in respect of the duality of organic matter. It is manifest that the life and sentient forces cannot be separated

except ideally, from the substances of which they are the complement. But since it has taken centuries of hard, earnest work among the atoms to unite them with force, so it seems not unlikely to take as many more centuries to unite into one indivisibility the body and soul of man.

With no intention of reflecting disparagingly on the labors of physiologists, to whom civilization is so much indebted, the method pursued by them in the prosecution of their physiological researches has seemed to obscure the identity of the being whom it was their object to discover and investigate. On the revival of dissection it is noteworthy how curious were the physiologists to discover the seat of that of which the monks held a tradition as existing somewhere in the human body—the soul. For many generations, indeed, the residence of the soul was an object of profound search; and no less a philosopher than the celebrated French metaphysician, Descartes, finally gave it place in that little body situate in the proximate centre of the brain, and afterwards known as the Pineal gland.

It would not be paying sufficient respect to the genius of Descartes, however, to call his conclusion on so weighty a matter absurd; for philosophers greater than he had committed equally grave blunders on that subject long before him. The divine Plato, who probably never saw the inside of a human body, gave the soul a residence in the head. But then he divided it into a trinity of parts, or elements, which he called the Same, the Other and an indefinable Something different from either, but

which was the product of both; very much, we should think, as a chemical compound is formed through the laws of chemical affinity. First, there is the alkali, then the acid, and in the chemical union of these two is produced a third substance, with properties unlike either of the others—viz.: a salt. Democritus, also, gave the soul a place in the head—in the whole head. Strabo located it in the forehead, between the eyebrows; Erasistratus, in the epiceanis, or membranes of the brain; Parmenides placed it in the breast; as did, likewise, Epicurus, the materialist. Diogenes was more definite, believing that the soul of man occupied the left ventricle of the heart. Empedocles, the celebrated Greek astronomer, thought it permeated the blood. Pythagoras divided the soul into two parts, animal and intellectual, somewhat analogous to the conscious and unconscious life, the brain and the sympathetic system, of modern physiologists. Nor was that philosopher far astray in placing one part, the intellectual, in the head; the other part, the animal soul, in the heart. The stoic philosophers, according to Plutarch, very generally gave the soul a place in the heart, and ascribed to it the general character of "hot breath."* Modern theology, which is clearly of Greek origin, confounds the soul with the mind, but distributes it impartially between the head and the heart.

It would be, on the other hand, no difficult task to cite from the writings of the ancients, as well as from those of modern times, very different, and to

* *Vide* Plutarch's *Morals*. Vol. III., pp. 163, 164.

us, far more rational ideas in respect of the seat and nature of the soul of man. The Grecian sage, Thales, taught the existence of a soul which permeated the whole human body, the latter being only its visibility and instrument, so to speak. He likewise invested the universe with a soul of a certain sort, which was its moving and governing power. This soul was no other than the ever-living, moving, acting Presence—God. Timæus, too, entertained a similar idea of a human soul, and gave to it "power to be mistress and governess of her inferior servant," * the body. And Plutarch's opinion was not altogether dissimilar: "The substance of the body," he declared, "is no other than the all-receiving nature, the seat and nurse of all created things."†

No subject interested the Greeks so deeply as nature and destiny; nor was there any subject on which they discoursed so profoundly, or in which they showed so deep an insight.‡ And, perhaps, we have no evidence more conclusive, in support of this fact, on the rationalistic side, than that to be found in the writings of the father of philosophy himself, viz.: Aristotle. That extraordinary thinker gave to mankind a rational solution of the occult phenomena of all forms of being, which one may read to-day with interest and profit. In

* Plutarch's *Morals*, Vol. II., p. 335.

† *Ibid.*, p. 331.

‡ *Vide* Plutarch's discourse on *The Procreation of the Soul*, in which the views of many of the philosophers of ancient Greece are given at considerable length, notably those of Plato. *Morals*, Vol. II., p. 326, *et seq.*

fact, we owe the term psychology to his analytical and versatile genius. The term ψυχή (Psyche), for which we believe there is no proper synonym in any language of modern times, was used by this master of thought to denote that principle in organic matter analogous to what the modern physiologist designates life and soul, both. Taken in connection with the human body and brain, it denoted its animating, controlling principle. "Psyche," he writes,* "is to the body as form is to matter, as the impression is to the wax, as sight is to the eye . . . . It is the efficient, the final and the formal cause of the body . . . . This ψυχή, therefore, is inseparable from the body, at all events, [from] some of its parts, if it be divisible. Nothing, however, hinders, that some of its parts may be separable from the body, as not being actualities of the body at all." Just as one can conceive the human body may be divided by the loss of an arm, of a leg, or, perhaps, of all the extremities, without destroying the essential and indispensable parts, on

* *Vide* Sir A. Grant's Aristotle's *De Animâ*, p. 236. Grote's interpretation of Aristotle's *De Animâ*, is to the same effect. We add a brief citation:

"In regard to soul generally, the relative point of view, with body as the correlate, is constantly insisted upon by Aristotle; without such correlate his assertions would have no meaning. But the relation between them is presented in several different ways. The soul is the cause and principle of a living body; by which is meant, not an independent and pre-existent something that brings the body into existence, but an immanent or indwelling influence which sustains the unity and guides the functions of the organization."—Vol. II., p. 160.

the *ensemble* of which depends the individuality. Moreover, Aristotle regarded all psychical phenomena as coming within the scope of physical science, since they were inseparable from matter and the form and substance of animated things.

With the lapse of Greek civilization, interest in the subject from the rationalistic point of view declined, and remained dormant during the Middle Ages, to be again revived with the revival of letters, and the consequent growth of a spirit of mental independence. In more modern times the Germans appear to have led the world in that direction; breaking away from the bonds of tradition with more facility than the rest of mankind, and striking out for themselves fearless and independent courses of thought and inquiry. Thus, that German mystic, Novalis, of the eighteenth century, identified the soul and body as substantially one and the same. "There is," says he, "but one temple in the world, and that is the body of man. Nothing is holier than this high form. Bending before men is a reverence done to this revelation in the flesh. We touch heaven when we lay our hands on a human body." * The habit of viewing the body as the fount of everything vile and vicious had not been nearly outgrown in Novalis' time; and one can well understand how natural it was for zealous Christians to characterize this remarkable man and poet as "crack-brained," or an "enthusiast." His unfailing amiability and sweet, poetic life, alone saved him from becoming the victim of a worse

* *Vide* Carlyle's *Miscellanies*, Vol. II., p. 292. Art. *Novalis.*

fate than that of being branded with opprobrious epithets.

It is interesting to note in this connection that He who embodied in his earth-life the fullest spiritualistic conception of existence, was himself no spiritualist in the modern acceptation of that term. He nowhere idealized a soul apart from the body. And in his death and alleged resurrection, body and soul, the form and substance of being, continued inseparable. "Everything to him resulted in a palpable realization." "He was," as Renan observes, "a perfect idealist; the material to him being only the sign of the idea; and the real, the living expression of that which does not appear." *

The eminent Strauss, philosopher and theologian, but who was, as every man ought to be, who is either, a philosopher first and a theologian afterwards, expressed his views on this subject in a more prosaic, but less comprehensive manner:

"Many of the difficulties environing the problem of thought and feeling," he writes, "entirely proceed from this assumption of a psychical essence distinct from the corporal organs. How, from an extended non-thinking thing, such as the human body, impressions can be conveyed to a non-extended thinking thing, such as the soul is supposed to be; how impulses are retransmitted from the second to the first; this no philosophy has yet explained, and none ever will. The matter must," he continues, "in any case, be much more intelligi-

* *Life of Jesus*, p. 141. (English tr.)

ble, if we have only to do with one and the same being, of which in one respect extension is predicable, in another thought. Of course we shall be told such a being is not possible. We reply, it exists; we, ourselves are all such beings." *

Returning to the poets, and retracing the lines of our evidence two hundred years or more, back to the time of Milton, we find that great poet and thinker recording his convictions concerning the relations of body and soul in language in entire accord with that of Strauss, above cited:

"That man is a living being," he writes, "intrinsically and properly one and individual, not compound and separable, not, according to the common opinion, made up and framed of two distinct and different natures, as of soul and body, but the whole man is soul, and the soul, man; that is to say, a body, or substance, individual, sensitive and rational."

And elsewhere, but in the same connection, he combats the notion—for it was never anything but a notion—that the sacred writings anywhere sanction a different view of the constitution of man's corporal being.

"That the spirit of man," he says, "should be separate from the body, so as to have a perfect and intelligent existence independently of it, is nowhere said in Scripture, and the doctrine is evidently at variance both with nature and reason, as will be shown more fully hereafter." †

* *The Old Faith and the New*, Vol. II. p. 17. (English tr.)

† Milton's *Prose Works*, Vol. IV., pp. 188, 189. Bohn's Edition, London, 1853.

He then proceeds to support his assertion by citations from the Old Testament—the authority of which on such a subject would, in our view, add nothing to the weight of his own.

The comprehensive conception of that great master of thought and speech on this subject, Goethe, is well known. We have already cited (*ut supra*) two lines from *Faust*, which show unmistakably that he was in perfect accord with the scientific thought or conception of the subject. Goethe frequently expressed the idea of the visible being but the externality of the invisible; the form being but the garment of the spirit, etc. So, likewise, Carlyle, in his mystical prose poem, *Sartor Resartus*, elaborates the same thought, making Teufeldsröchk, the eminent Clothes Philosopher, enunciate the most transcendental doctrines of human nature, showing the author to have been emancipated from the delusions of the sensuous observer. To him the form was the spirit manifest; flesh its visible garment or embodiment; man, a living soul, one and indivisible. In Carlyle's view Nature and God were one and the same existence, conformable to doctrines very ancient and which are by no means obsolete in modern thought. Thus in *Sartor Resartus*, in the chapter on *Natural and Supernaturalism*, he writes: " . . . Through every star, through every grass-blade, and most through every living soul, the glory of an ever-present God still beams." (p. 183.) " Nature, the time-restorer of God." (*Id.*) " These limbs, . . . this stormy Force, this life-blood, with its burning passion? They are dust and shadow,

a shadowy system gathered round our ME; wherein, through some moments of years the Divine Essence is to be revealed in the flesh; . . . generation after generation takes to itself the form of a body."

"Son of God," "Son of Heaven," "Emmanuel," meaning "God with us," are words and phrases of very old date to express the stature of a being above the average—a man whose cerebral convolutions have grown to the capacity of comprehending the higher relation of things. The Greeks and Romans had numerous gods in human form, of which this might justly be said, living, moving human beings, whose utterances were worthy of being regarded as "Oracles of God"—Alexander, Cæsar, Socrates, Plato, etc. The latter personage is very commonly spoken of by the Greek writers as divine. So also was Alexander. Novalis, too, conveys to us the same idea when he declares that "Man is the higher sense of our planet"; "Man is the sun," etc. Carlyle, then, is by no means alone in the conviction that "the highest God dwells invisible in that mystic, unfathomable visibility, which calls itself 'I' on the earth." *

In citing these views and reflections of the poets and philosophers of ancient and modern times, in confirmation and support of transcendental, but by no means unscientific, views of nature, we are not unmindful of the fact that the intuitions of that class of minds will not be received as conclusive evidence, perhaps not as evidence at all, by a physi-

* *Past and Present*, p. 155.

ologist. Nor do we give them prominence with that object. Nevertheless, that such evidence should be left out of the count altogether by physiologists in forming their conclusions, is the worst thing that can be brought against them. This domain of thought is one in which the induction of the physiologist is secondary. The problem is transcendental; embracing a class of phenomena which lies outside the present limits of science, of which the psychologists are the more competent to speak. To those who believe in the authority of Revelation as supreme in matters that pertain to the invisible and eternal, the unconscious presence of other personalites; in a universe, in brief, full of transcendent mystery; to those, we say, who realize somewhat these grandeurs, it will be sufficient to say, in the inspired language of Novalis: "Whoso speaks truly is full of eternal life; and wonderfully related to genuine mysteries does his writing appear to us, for it is a concord from the symphony of the universe." The honest declarations of divine men *are* comparable to divine revelations. The highest in them instinctively recognizes its affiliations with the divine—the supreme excellence; and their words are as the "inspiration of the Almighty."

"Vitality and sensibility, life and consciousness, are abstractions having real concretes. They are compendious expressions of functional processes conceived in their totality, and not at any single stage." * So writes the late George Henry Lewes; and no one ought to realize the force of that view

* *Problems of Life and Mind*, Vol. I., p. 102.

with greater distinctness than the observant physiologist. The teaching of physiology, so far as it is able to teach at all, on this subject—and it can teach by analogy a great deal—is not at variance with the transcendental doctrines of the poet-philosophers whom we have cited. The difficulty with which one has to deal on the physiological side of nature lies altogether in interpretation. Its professors and writers very properly confine themselves to phenomena and induction based thereon, appealing to the evidences of the lower senses—touch, taste, sight, etc. And he who would arrive at the real, beyond and above the apparent meaning, must be able to "read between the lines;" or, in other words, to transpose liberally the relation of cause and effect as ordinarily taught; to look beyond the visible and sensible to that which is invisible and supersensible.

One who stands between the extremes of philosophic thought on this subject, cannot but sympathize with all these views of life, mind and soul, to which we have adverted, incongruous and conflicting as many of them are. He sees in each one's view what the observer saw from his point of observation. Had their mental vision been clearer; had their position been illuminated with clearer light and a more favorable atmosphere, they had possibly seen the real truth. Boil these diverse and contradictory views all down together, and who knows but the pure truth shall be found in the residuum? As for us, we believe in the "archeus of Van Helmont, and the "spirits" of Stahl; the "animal spirits" of

Fleming, and the "nervous fluid" of Whytt and Cullen. "Archeus" is generated in the marrow and worked off in automata, directing this hand how to write and what, is it not? The red fluid that courses in one's veins, is it not "animal spirits"? If it could be perpetually supplied to one it would give one perpetual life. Macerate the nerves and ganglia, or put them under hard pressure, and what do they yield, if not "nervous fluid"? The very essence and pulp of body and soul, life and mind, could thus be collected into one retort for the delectation of those who have a curiosity to handle, weigh and measure abstractions! The flesh and blood, brain and bones of a man, are the man himself, are they not? Reduce these several tissues to atoms and what becomes of the man? Can any one doubt his externality—his *veritatum*, as Carlyle would say—is destroyed in the process? or that, if consciousness still remain with him, it must be through metamorphoses of substance and of being of which one's ordinary senses can take no cognizance? But it is idle to push one's inquiries in a direction whence come only echoes in response.

Finally, we observe that, a human being is so thoroughly human in every fibre and cell—nay *atom*—of his body, that each is characteristic of him. Every atom is full of him—say, rather, that every atom is an atom of his being, soul and substance, archeus and form, the invisible in the visible, and all in one, and the divine in all. Such an idea is unintelligible, says one. It is surely a mystery, but not

more unintelligible than the atom, or its combinations. What is a mystery if substance be not one, or form, or force, or thought? Does not the whole contain the part—the Infinite the finite? the Immortal, the mortal? The difficulty that environs this subject is not so much in its exceeding complexity as in man's dimness of vision, and the habit he has formed of dispensing with the use of his higher sense—the sixth sense—perception. He has been taught by precept and example to bring every fact in nature to the test of the lower senses, and to relegate to faith, blind and unreasoning, what, in his view, could not be so reduced. He has thus become materialistic in his habits of thought and mode of feeling and being. Even the devoutest Christian has reduced the ideal heaven of Jesus to an immense Empire, whose capital glows with splendors modelled after those of the ancient City! And if he cannot give it local habitation in space and time, it is because his telescope is not long enough to find a place for it in the limitless spaces beyond the confines of the stars and suns of other solar systems. This materialism, so rank and repulsive when carried out to its logical sequences, is a legitimate result of attempting "to prove all things" before a court of incompetent jurisdiction—those five senses, by which we see, taste, touch, smell and hear, we mean, which are possessed in greater or less perfection by every species of animal in the class to which man himself belongs, and of which he is chief. Is not the fallacy of such a procedure self-evident?

But it may be objected that this view of the rela-

tion of matter and force is opposed to the doctrine of immortality. And it must be admitted that the objection is well taken, if by immortality is understood to be the sensible rehabilitation of an individual once dead, or the rehabilitation of the individual organism after death, in any sense of which one can possibly comprehend. The evidence of the senses on this subject is entitled to respect in so far as this plane of being is concerned. The grave is truly a bourne whence no traveller ever returns. Our senses may properly dogmatize in respect of the fate of the bodily organization, as well as of that of any organic or inorganic form whatsoever. The process of living is one of de-organization, if we may be allowed to use such a term, and re-organization; and when this double process ceases and de-organization alone bears sway, the form begins to vanish and is finally broken up into its elementary constituents, and with it—for aught we know—the psychical powers which were identified with it and were contingent upon it. But while this fact is demonstrable on the objective or scientific side of nature, it by no means follows that de-organization of organic forms ends all. Such a conclusion is not justifiable except by assuming that our powers of observation are infinite, and therefore capable of taking in the whole range of cosmic phenomena. But, it is needless to observe, our powers of observation are finite. There may be forms of matter, and, therefore, modes of being, of which we know nothing, and which could only become sensible to us by an augmentation of our sensibilities. It is certain that the

more one comprehends of the divine order of things the less one is disposed to dogmatize against the possible in the realm of life and being. To the awakened sensibilities the known gives promise of the Unknown, the present of the Future. Such an one is instinctively led by them to look forward—as with the eye of faith—to a new and superior order of things in the "unseen world above;' to a "New Jerusalem," on which the prophets of every age have rested their hopes and aspirations and sacrificed the pleasures of this life for the glories of that to come. Many persons who are strongly imbued with the scientific spirit and enamored of its method of dealing with natural phenomena find nothing unreasonable in this view. Thus writes Herr Strauss: "If it be a cosmic law that impeded motion is transformed to heat, and heat again begotten by motion —that, in fact, the force of nature as soon as it has disappeared in one form, reappears in another—the possibility surely here dawns upon us that in the retardation of cosmic motion nature may possess the means of summoning new life out of death." *

Again, it may be objected that this view of the constitution of matter is inconsistent with the existence of a Supreme Being and an order of things predicated on His will. But the objection in this instance, as in the other, is valid only against those crude ideas of God which have taken on form and been embodied in dogmatic theology. One should reason on this subject—and on all subjects—from

* *The Old Faith and the New*, Vol. II., p. 181.

what one knows, reverently trusting in the wisdom of the end to which one's lines of logic and discovered truth lead. If a Supreme Being exists at all, it is on the *subjective* side of nature, beyond the reach of finite faculties, as we have observed. In respect of such a realm of observation, we may remark that man, with all his aids of research and discovery, is little better prepared to speak authoritatively than were his primeval and benighted ancestors. It is true the noblest of his race believe in the existence of such a realm of Being. They feel a divine power within and over them, impelling them onward and upward. They may be more conscious than the lower "ape-like creatures" of a Supremacy against which it is idle to contend, and more fully realize the counter-currents which complicate human life in that limitless ocean of influences on which we are drifting. They may be able to "reason together" concerning the nature of the Supreme Excellence; to demonstrate that He is *not* of this or that form; that He does *not* inhabit exclusively the solar spaces, or confine His abode to the altars and temples which reverent hands have reared and built for Him, or His presence to this sect or that; that He is *not* moved like ourselves by eloquent appeals; and that He does *not* interfere specially and arbitrarily to commiserate, reprieve, or punish. But, beyond such self-evident negations as these the man of the period can know little more of Him whom he calls God than the caudate creatures from which the race is said to have descended. And he, therefore, who holds the

counter view and arrogates to himself powers superior to these, or insight deeper than this, may be justly suspected of unwittingly abusing the sublime gift of imagination to deceive himself and to cause others to be deceived. "Who by searching can find out God?"

PART II.

SOUL AND BODY.

"The physiological properties of the nervous system are inseparable from every segment of that system; and the functions are the manifestations of those properties as determined by the special organs with the coöperation of all."—*Lewes.*

"That man is a living being, intrinsically and properly one and individual, not compound and separable, not, according to the common opinion, made up and framed of two distinct and different natures, as of soul and body—but the whole man is soul, and the soul, man; that is to say, a body, or substance, individual, animated, sensitive and rational."—Milton's *Discourse on Christian Doctrine.*—Prose Works, v. IV., p. 188. Bohn's ed. 1853.

PART II.

SOUL AND BODY.

HAVING considered the relations of matter and force on the lower plane of nature, and illustrated the subject with the thought of such thinkers, both in physics and metaphysics, as were accessible to us, it will be interesting to extend our inquiry to the domain of physiology and biology. As our subject comprehends the relation of soul and body, it may not be out of place to remark at the outset that our object is not to unsettle the faith in immortality, or a future life, which is so precious to many, and as precious to us as it can be to any one, but rather to unsettle and refute the sophistries with which that faith is enshrouded. Moreover, we would remind the over-sensitive on this subject, that it is really no part of our theme to discuss the mooted problem of immortality. We make no pretension to have fathomed the mystic depths of human life—of life or force of any kind. While we hold the subjects of life after death and a spiritual existence in abeyance, we agree perfectly with Mr. Lewes when he

says: "Thus there is no logical contradiction in the existence of a spiritual world in all its features entirely unlike the sensible world. We cannot say that such a world is impossible; we can only say, that, if it exist, it is to us inaccessible, because to become accessible it must pass into the sphere of the sensible, and in the passage it will cease to be suprasensible." * Moreover, there may be matter within matter, and mind within mind without limit, and modes and qualities of being and substance which are incomprehensible to us—a possibility entirely consistent with our knowledge of the sensible world. It is a source of satisfaction to us to know that the revelations of science—rather let us say, in what it leads us to infer than what it reveals—point to this conclusion; such, for example, as the ether-hypothesis, and the inference, entirely legitimate, of the existence of microscopic monads so minute as to be infinitely beyond the powers of finite agencies and senses to detect and appreciate. Let us reason on any subject from what we know, freely and without trammel or fear of logical consequences, like free-born men, holding firmly and abidingly to a living unfaltering faith in the universal and everlasting Providence.

Physiologists have divided and subdivided the human body into so many parts; isolated so many tissues, glands, organs and nerve-centres; differentiated such a variety of systems, properties, functions and faculties, that it is not at all surprising that the student should sometimes lose sight of the unity of

* *Problems of Life and Mind*, p. 248.

that rational being, man, which is the real object of his search; nor that the human personality, one and indivisible, which can only be recognized in the undivided whole, should, in the confusion incident to the multiplicity of the parts, escape his attention. The knowledge of the minute details, which is essential to success in the medical art, has a tendency, unfortunately, to dwarf the imagination of the observer and to make a routine plodder of one who ought to be a philosopher. He begins with bones, and ends with nerves and neuroses. If he ever arrives at a soul he has to invent one. This narrowing tendency ought to be guarded against by the physician if he would attain excellence in medical art and science. M. Despine, in his comprehensive work, *Pschyologie Naturelle*, takes special care to charge the psychologist with the propriety of readjusting the dissected parts of the human anatomy, if he would obtain a clear, comprehensive conception of the real being which the whole embodies: "Si donc," to use his own language, "pour étudier l'homme, nous sommes obligés de séparer les éléments qui le composent, hâtons-nous de les rèunir, afin d'apprécier l'ensemble, qui seul le constitue."*

With this analytical method of studying the human form we have no fault to find. It is a necessity if one would acquire a minute and detailed knowledge of structure and function which it is our object to possess. It seems to us, however, from the narrow, partial and incomplete view of man pre-

* Vol. I., p. 603.

sented by many physiologists of to-day, that, after studying his anatomy with an industry highly creditable to them, they had really misapprehended the relation which the parts sustain to the whole; had in fact forgotten to reunite the parts so as to present that unity and symmetry the perfection of which is ultimated in the human being.

The justness of this criticism will be apparent to any one who will take the trouble to observe the degree of functional independence accorded the two great systems of nerves, the sympathetic and the cerebro-spinal, from which one might easily infer that man was a double being, vegetable and animal; possessing two separate and distinct lives, organic and psychic, conscious and unconscious. Nothing, however, could be farther from the truth than such an inference, as all know. Nevertheless, while all physiologists freely admit man's physiological unity; that all his parts are required to constitute the ideal whole, they still insist on keeping up the distinction of body and mind, mental and physical; one of which is destructible, mortal; the other—indestructible, immortal. Even Despine,* to whose excellent work on Psychology we have already referred, keeps up the antiquated distinction, defining man as an animal of a superior species, composed of a body and a soul: "L'homme est un animal d'une espece supérieure, composé d'un corps et d'une âme; animal, que rendent raisonnable et moralement libre les connaissances qu'il acquiert par les facultés morales et par les

* *Psychologie Naturelle*, Vol., I. p. 601.

facultés intellectuelles." The learned author states, however, in the general summary of his work, that he purposely limited himself to the study of "the faculties of the mind and their diverse manifestations," leaving all those questions which do not strictly belong, in his view, to the domain of observation, to philosophy.* "La psychologie, c'est-à-dire la science des facultés de l'esprit et de leurs manifestations diverses, ne doit pas sortir de l'étude de la nature, et c'ést dans ces limites que je me suis constamment maintenu. Quoique spiritualiste, j'ai laissé de côté toutes les questions métaphysiques puis qu'elles ne ressortissent point du domaine de l'observation, des sciences naturelles." Nevertheless, he frequently discloses a tendency to respect the dogmas of theology as if they were absolute verities, to be received in silence if not with acquiescence. We note this peculiarity simply for an occasion to remark, *en courant*, that it is an error not uncommon to certain scientists. It is born, not so much of slavish subserviency to spiritual authority, as of the fear of *the sequences of rational logic*. The latter, it is needless to say, is wholly foreign to the scientific spirit, which is content with the discovery and annunciation of truth, and concerns not itself with the consequences which loyalty to truth sometimes entails, but accepts them without question, if not with satisfaction. This is the courage of conviction,—a product of the scientific spirit; the moral and intellectual freedom of which so many boast, but which so few possess,

* *Psychologie Naturelle*, Vol. III., p. 531.

which brings to its earnest possessor rest, peace and faith supreme in—Truth.

Returning to our main subject, we remark that, all the diverse distinctions which have so long been maintained to distinguish man's complex nature, as body and soul, mind and spirit; and qualities of being, as physical and psychical, etc., are predicated on pseudo-metaphysical conceptions. These separate the subjective from the objective and make an entity of that which has no existence apart from the *conception* of it. If it were a rational procedure, this process of dividing the human being might justly be carried to much greater length. Instead of having one body and one soul, one mind and one spirit, his nature might be invested with several, since he is a universe in miniature in very deed, and has within him the essential characteristics of every species of being and every form of life and mind.

Plutarch wrote better than he could have known —better, at least, than the facts in his possession could have warranted—when he declared that "the substance of the body is no other than that all-receiving nature, the seat and nurse of all created beings." * The idea was not new in Plutarch's time, nor is it new to-day to the poets and thinkers, who, like Plutarch, do not square their views of nature and things by purely objective phenomena, but who embrace causes in the category of phenomena, and advance to the broader generalization of a comprehensive design in the nature of things. The idea is

* *Morals*, Vol. II., p. 331.

new, however, to that very staid and respectable class of thinkers who cling to science as the polar star in philosophy, and accept nothing as true which it fails to verify. And what is most interesting in this connection is that the demonstrations of science are slowly preparing the scientific mind to accept the sublime deductions of the poet-philosophers respecting the unity of the material and spiritual, body and mind, the agency of mind in nature and in those countless orders of being that take on form and substance—become visible in nature. Science is, in fact, revolutionizing physiology in the direction of transcendentalism.

To say, therefore, that man is a physiological unity, or that he comprehends in his nature and substance the nature and substance of the Cosmos, or that he is a universe in miniature is not indulging in metaphor, or figure of speech, to charm the imagination, or to overawe the sense; neither is it putting a poetic, unreal, or fanciful construction on a fact. Rather is it uttering a grand, literal, sublime and solemn truth, the full force and significance of which no language is adequate to convey to the understanding of the untrained mind.

So, too, in respect of the nature and universality of life and mind, the facts and inductions of science point to no uncertain conclusion. If there is any truth in the doctrine of the correlation of force, there are as many kinds of mind as there are forms of matter or substance to correlate them—force and mind being essentially identical; form and substance their externality. Herein science and philosophy

support each other. "Toute la substance matérielle de l'univers," very truly writes M. Vacherot, in perfect accord with science, "se ramène donc à un nombre infini de forces simples, indivisible, individuelles, de monades qui une fois créés produisent d'elles-mêmes l'ordre universel du Cosmos, en vertu de cette loi de l'harmonie préétablie, conséquence necessaire de la nature de l'action des principes élémentaires." * This "law of harmony" is immanent in nature, not exterior to it. It is a convenient phrase to express *design*, which is likewise immanent, in every form of matter, inorganic as well as organic. As the author just quoted well says:

"Dire que toute substance est force ne suffit pas; il faut ajouter que toute force simple a en elle le principe de sa direction, et que le mouvement par lequel elle se produit est une tendance vers une fin." †

To deny this dignity to inorganic matter is a compromise to the common understanding, and is nowise justified by the teachings of science, or of sound philosophy. The law, or design exhibited in the snow-flake may be of a lower order than that exhibited in the monad, but each is perfect in its way, evolving itself according to an ideal, innate, definite and uniform. In the fine language and thought of M. Vacherot, in his essay referred to above, "C'est dans la substance cosmique elle-même qu'elle nous montre l'activité créatrice de la cause finale opérant

* *La Philosophie des Causes Finales. Revue des Deux-Mondes.* Sept. 1er, 1876, p. 55.

† *Ibid*, p. 61.

d'après des lois immuables, éternelles et universelles, conformees à son essence même." *

This fact, so constant in the evolution of every form of substance in nature, presupposes the immanence of mind in matter, call it by whatever name or phrase we may—law, instinct, principle of differentiation, or the will of an all-powerful Creator. The doctrine of the mutual convertibility of the forces, physical, and psychical, the truth of which has become axiomatic, lends strong support to this view—as before stated. We are taught by this doctrine the legitimate kinship of the forces; that the diverse forms of force are forms of mind, and *vice versa*, the diverse forms of mind are forms of force. If this proposition be true, it is wholly legitimate to say that there is one form of mind in the primordial elements, as manifested in the phenomena of crystallization ; another, in chemical compounds, as shown in the phenomena of chemical affinity ; still another, in vegetable forms—the organic force ; and numerous others in the ascending series of animal forms, from the simple cell formation of the jelly fish up through every grade of being to its supreme development in the cerebral convolutions of the divinest man.

Von Hartmann, in his "Philosophy of the Unconscious," has elaborated this view of life and mind. And Prof. Ernst Haeckel, of Germany, the eminent apostle of Darwinism, is in perfect accord with it. "We thus arrive at the extremely important conviction," he writes, "*that all natural bodies* which are

* *La Philosophie des Causes Finales. Revue des Deux-Mondes.* Sept. 1er, 1876, p 55.

known to us are *equally animated;* that the distinction which has been made between animate and inanimate bodies does not exist. When a stone is thrown into the air, and falls to the earth according to definite laws; or when in a solution of salt a crystal is formed, the phenomenon is neither more nor less a mechanical manifestation of life than the growth of flowering plants; than the propagation of animals, or the activity of their senses; than the perception or the formation of thought in man." *

It is impossible to overestimate the influence of these conclusions on physiology. Having a basis on scientific demonstration, they must ultimately revolutionize the old ideas of the relation of mind and matter, and make way for the solution of many problems of human nature which have hitherto been inscrutable, or subjects of inane and profitless conjecture. The old distinction between life and mind has already been broken down by them; and forces, which have ordinarily been regarded as entities, as vitality, mind and spirit, are now reduced to abstractions, having no existence apart from forms and substances which correlate them—except in the intellect of the observer.

Is it not an error, therefore, to assume, as we commonly do, that the mind of man has its seat exclusively in the head? "It is the man, and not the brain that thinks," tersely observes Lewes. "It is the organism as a whole, and not one organ, that feels and acts." †

* *History of Creation.* Vol. I., p. 23.

† *The Physical Basis of Mind,* p. 499.

In the light of modern science, George Eliot wrote the prosiest truth, though in the garb of poetry, when she penned the following lines, in the *Spanish Gypsy:*

> "But for the point of wisdom, I would choose
> To know the mind that stirs between the wings
> Of bees and building wasps, . . . rather than to know
> The thoughts of warriors."

The supremest intelligence, the logical, thinking faculty undoubtedly has its seat in the head, and thought itself is due to the normal activity of the cells of the cortical grey substance. But other kinds of mind, such as the unconscious life and sensibility of the individual, are peculiar properties, so to speak, of the other parts of the organism, carrying forward its several functions; the processes of nutrition, growth, repair and decay, etc.; comprehending all those activities the ensemble of which is known as the bodily life. "The brain," says Professor Huxley, "is only one condition out of many on which intellectual manifestations depend; the others being, chiefly, the organs of the senses and the motor apparatuses, especially those which are concerned in prehension and in the production of articulate speech." * The revelations of physical science have not only prepared one to entertain this view of life and mind, but the evidence derived from vivisection, notably the experiment of Pflüger with a decapitated frog, gives strong support to it, if indeed, it does not demonstrate the absolute truth of it. Not only do the phenomena of nutri-

* *Man's Place in Nature,* p. 122.

tion go forward normally, and physical movements co-ordinate regularly in, and by animals whose cerebra have been removed, but other and more complex and demonstrably intelligent actions are performed by them, as shown in the well-known experiment of Pflüger, just mentioned.

Were this view of mind and its agency in nature peculiar to us we should put it forth with greater diffidence than we now do, even were the facts of nature and observation more conclusive in its support than they now are. But, fortunately, we can lay no claim to the exclusive possession of biological and physiological doctrines so bold and revolutionary. Not only were they advanced by Aristotle and other Greek philosophers more than two thousand years ago; reaffirmed by Leibnitz, Spinoza, Cabanis and others, of the last century and early in this; advocated by poets like Milton, Goëthe, Novalis, Schopenhauer, and others; but some well-known physiologists and naturalists of the present day give in their adhesion to them. "It behooves us" writes Dr. Maudsley, "to clearly realize the broad fact, which has most wide-reaching consequences in mental physiology and pathology, that all parts of the body, the highest and the lowest, have a sympathy with one another more intelligent than conscious intelligence can yet, or perhaps ever will, conceive; . . . that the mind as the crowning achievement of organization, and the consummation and outcome of all its energies, really comprehends the bodily life." * And elsewhere he writes to the same

* *Body and Mind*, 2d Ed., p. 102.

purpose: "As the man of genius implicitly contains humanity, so nervous element implicitly contains nature." * In the latter remark, however, the eloquent writer is less felicitous. The nervous element does undoubtedly "contain" or comprehend the higher forms of nature; but there are, certainly, other and lower forms of nature which the nervous element does not contain, or include, notably the mineral and vegetable kingdoms.

But we are not, on the present occasion, concerned so much with the nature of mind and life, as with the unity of form and substance, body and soul—the oneness, monism, of that which is usually regarded as divisible and separable. "The Cosmos," says the late Herr Strauss, "is simultaneous both cause and effect, the inward and the outward together." † And man, who is but the repetition of the universe on a small scale, is both soul and body, the outward and the inward together, one and inseparable. The first lesson which the observant physiologist is called upon to learn is the coincidence and interdependence of form and force, substance and property, structure and function. The visible and the invisible are indissolubly linked together in the phenomena of nature. Function could not exist without structure; force without matter; intelligence without nerve substance; the psychical without the physical. These are the two sides of one and the same being;—phenomena so mutually dependent in every form of being that the naturalist

* *Physiology and Pathology of the Mind*, p. 63.

† *The Old Faith and the New*, Vol. II., p. 163.

could easily dispense with either side of it, and deal exclusively with one or the other, without materially changing the practical results of his conclusions; —that is, he could pursue his investigations on either the physical or psychical side of life with equally faithful results. In physiology the fact is being illustrated daily in the harmony between mental physiology and natural psychology; mental pathology and medical, or morbid, pyschology; the one unfolding the normal function and structure; the other the abnormal structure and function—the disordered pyschical phenomena of thought and feeling, to which the disordered and diseased substance and structure of the physical—or pyschical, if one prefers the term—organism gives rise. It may not be uninteresting to trace this relation as briefly as may be in the development of the animal kingdom—on the normal side of nature—though the abnormal side is equally instructive and conclusive.

All the varieties of animal life are known to us through peculiarities of form that distinguish each species; and all the properties or powers manifested or possessed by them, they hold by virtue of some peculiar substance or structure upon which such properties or powers are contingent, and by which they are able to transform plastic matter into their own peculiar substance. That which is true of the simplest form of matter is equally true—only with greater prominence—with organic forms the most complex. The lowest form of animal life, of which we possess any definite knowledge, for example, is the *Amœba*, of the *Protozoa* family, and the lowest

of the class *Molusca* of Agassiz. These animals, if such they may be called, are mere conglomerations of plastic matter, which Dr. Carpenter characterizes as "living jelly." Their structure consists of an aggregation of simple cells, homogeneous throughout. They possess the powers of motion and selection, however, in so far that they wrap themselves around their food, as occasion requires, and after elaborating and absorbing the nutritious portions, summarily reject the rest. The animal character of this low form of being is shown chiefly by its dependence upon organic substances for its support, "which it gradually dissolves and appropriates that which is fitted for its own increase." Assuredly protoplasm and life are not distinct entities in these forms, except as a conception of the intellect!

Then there are the *Rhizopoda* and *Porifera*, with more complicated structure, mode of growth and propagation, and possess accordingly a less simple substance as the basis of their formation. Both have a gelatinous composition, with some calcareous matter in their interior, and both present in their organization, "more or less distinctly the character of true cells." The latter, or sponge tribe, are provided with cavities which serve as stomachs; and also an extended system of pores for the entrance, circulation and absorption of nutrient matter; and even canals, as Dr. Carpentre calls them, for the passage of foreign and rejected substances. In the sponge animal may be observed an humble approach at differentiation of organs and functions, in the digestive apparatus, structure and mode of reproduction.

Dr. Carpenter says there is a reason to believe that in these low forms of aggregate animals, "a true *ovum* is produced; so that we here already advance to the same essential type of generation as that which prevails in the highest plants."* No vestige of nervous substance is discoverable in them, and yet they are not without the psychic element of *instinct*, as observed in their ability to some extent to care for themselves. Their psychical life is evidently as simple as their physical organization is humble.

Ascending the scale of being to more complex forms we find a corresponding complexity of psychical manifestations. In some of the lowest species of the *Mollusk* class, the *Ascidian*, for example, the simplest form of a nervous system is discovered, consisting of a solitary ganglion and a few branches of nerves. In these little animals, which consist of a simple oblong oyster-shape sac, with mouth, cilia and stomach, therefore, may be observed the beginning of what the older physiologists designated as the organic properties of sensation and contractility. The little tentacles that guard the oral orifice are described as peculiarly sensitive, for the distribution of nerves is mainly to the mouth; and even the body, if touched, contracts with more or less violence, and expels the contents of the sac. Here, also, may be seen the simplest rudiments of muscle. The higher members of the *Mollusk* exhibit a much higher nervous and muscular apparatus; and al-

* *Principles of Comparative Physiology*, 4th Ed., p. 70. Philadelphia, 1854.

though brainless, manifest powers of prehension in selecting food and escaping from danger. The highest of this class possess locomotive powers. And even the oyster and clam can open and shut their shells of their own free will. Their ganglionic organs correlate mind enough to enable them to regulate their simple functions and to fill the place to which wisdom has assigned them. We are aware that all the actions of this group of animals are referred by physiologists to "reflex" functions of the nervous system. But what's in a name? Since they exhibit a certain degree of intelligent phenomena—phenomena corresponding to those which we should expect to occur as a legitimate sequence of their nervous system, we prefer to characterize them *mental*, and to see in them the evidence of Mind in Nature. Dr. Carpenter, who would strongly oppose this view of the subject, as would also most other physiologists, distinctly states that "in our (his) examination of the nervous system of the *Mollusca*, we hitherto met with a progressive multiplication of its centres, in accordance with a progressive complication of the organism, and especially with the increase of its sensori-motor powers." * This admission completely covers the ground for which we contend. They possess sensori-motor powers by virtue of having sensori-motor nerve-substance.

Advancing now to the insect kingdom, to that numerous series of animal forms known as the *Articulata*, let us notice briefly the leading characteris-

* *Principles of Comparative Physiology*, 4th Ed., p. 70. Philadelphia, 1854.

tics of the nervous apparatus of certain members of this most interesting class. It is all the more interesting to us, in its bearings on our subject, for the reason that physiologists almost universally agree in denying any member of this class any degree of consciousness or intelligence; but insist upon consigning its psychical manifestations to the exclusive domain of "instinct," or "reflex action." "Whether such 'reflex action' is, or is not attended with consciousness depends on the other endowments of the ganglion which performs it; that it is certain that actions which *seem* to indicate a definite *purpose* and *will*, may be called forth by mere stimulation, under circumstances which forbid us to attribute to anything else than the automatic and unconscious action of the nerve-centre."* Its series of surprising movements toward a definite end; the remarkable cunning displayed by certain members of the group in executing their designs; the matchless ingenuity exhibited by them in building, weaving, mechanical designing, etc.; their acute powers of special sense; wonderful agility and endurance in flight and locomotion, etc., mark them out as a species preëminently worthy of all the study that has been given to them.

The *Annelida*, or lowest of the group, having but a limited development of the organs of special sense, are correspondingly wanting in the development of cephalic ganglia. Like the larva of insects, its nerve-cords and nerve-centres are distributed uniformly throughout its organism. In the higher forms of

* Carpenter's *Principles of Mental Physiology*, p. 47.

that class, however, there is a strong tendency to special concentration of the ganglia in the thorax and head, and with it a manifest increase in the organs of special sense. In the larva, the tendency reaches its climax after passing through its metamorphoses and attaining the *Imago*, or perfect insect. Although it now has no cerebrum, no cerebellum, and no medulla oblongata, comparable in any degree with those organs in the higher *Vertebrata*, it has nevertheless, enormous cephalic ganglia, as well as thoracic and visceral, which give strong visual and other powers of special sense; no small degree of intelligence, as observed in the sagacity, *alias* "instinct," of the bee and spider; and powers of locomotion and flight, as also seen in those insects. Indeed, the perfect insect (*Imago*) is chiefly constituted of ganglia, nerve-cords and nerve filaments, disposed and distributed in such a manner in the head, chest, abdomen, stomach, legs and wings, as to insure the greatest possible concentration of muscular and nervous powers in those organs, the exercise of which does most distinguish the class. Moreover, its corporeal form and structure show wonderful adaptation of means to ends and uses, of which all nature furnishes no illustration more conspicuous.

It seems to us that the physiology and anatomy of what Agassiz has classed as *Insecta*, afford evidence of the mutual dependence of material structure and psychical force as complete and satisfactory as the nature of the case admits. In all these forms of being we are not dealing with phenomena

exclusively, but tracing or endeavoring to trace, the connection of object and subject, and showing or endeavoring to show, their absolute inseparableness. And we fail to see the logic or justification of that view which would relegate the psychical phenomena of the bees and wasps to the domain of instinct, or to purely automatic or mechanical action, while attributing similar phenomena in the human species to the influence of conscious will and intelligence. Thus Dr. Carpenter, before quoted, ascribes the ingenuity of the bees to instinct, of which they furnish in his view, the perfect representation of that power; "its whole aim being to work out a design which is formed *for* it, not *by* it; and the tendency to which is embodied, (as it were,) in its organization."

But the reason which the learned physiologist advances as a justification for ascribing the mental powers of the bee to instinct, holds equally good in respect of the mental powers of man. The end which man works out was formed for him, and not by him, and he carries out designs of which he, for the most part, is entirely oblivious.

One is inclined to ask, Who forms the design of the geometric cell, or directs the building of the honey-comb? Who directs the spider to weave its web, or to lie in wait for its prey? Who suggests the operations of the ant, or the actions of the molecule? Are these cunning and refined processes and impulses guided and superintended by the hand of an objective Personality. By no means! Deity has more important affairs to manage than those of wasps, ants and spiders, say the physiologists. It

is "instinct;" "consensual impulses," "reflex action," upon which those duties devolve. How wise is the answer! We marvel at the power of words to cheat the intellect and render automatic definitions of mental phenomena. In this way and by such means, the understanding is robbed of its full participation in the glorious mysteries of the living, moving world. We apprehend that the designing power in all these instances is within, in the nerve-centres with which man, in common with all these ingenious and designing creatures is so well provided. Their skill in planning, weaving and building; their powers of foresight and prehension originate with them in the co-ordinating centres of their nervous system. The mental processes of the *insecta* are of the same nature and altogether similar to those carried on by similar faculties in man.

Let us now pass to the consideration of the fourth and highest series in the grand division of the animal kingdom—the *Vertebrata*—and proceed at once to the highest link in the chain of that series—Man.

In our rapid advance through the three divisions of the animal kingdom, no evidence has yet been discovered tending to show that the *subject* is ever dissociated from its *object, phenomena* from its *cause;* and it would seem a hopeless task to pursue the search with any prospect of success in the human species. The tendency of physiological research into the mysteries of the human economy, has been from the first, to connect the so-called psychical powers of thought and sentiment with organic functions of the highest ganglionic centres. And al-

though complete and entire connections have not yet been satisfactorily established, the process is so nearly completed as to leave no rational doubt of its ultimate attainment, as there is no shadow of a doubt that such a connection exists.

The evidence disclosed in the ascending series of animal forms, from the lowest jelly tribe to the class of vertebrated animals to which man himself belongs, goes to show that no form of being has been created, but that every form of being has been *evolved;* that man himself is an evolution, the grand coronation of the animal kingdom, the highest of all developed beings. We have seen a tendency manifest, even in the *Ascidian,* to differentiate organs and functions. In the human organism that tendency is completely ultimated. All minor groups of organisms, of which we have any knowledge, are differentiated in man and combine to form and differentiate the life human. The so-called vital properties, which exist isolated in the lower species of the animal, harmoniously blend in man. So, likewise, the corresponding substances and tissues, on which those properties are contingent, combine in the human organism to complete the microcosm of the universe—Man. These facts are disclosed in the minute study of his corporeal organization, and are by no means rhapsodistical declamations without force and meaning.

The sympathetic ganglia, with their distribution of nerve-cords and nerve-plexuses in man, bear in function a close analogy to that of the nervous system of the bee—an animal displaying the physiologist's beau-ideal of instinctive life. But its opera-

tion presents phenomena assuredly not less instinctive, so far as it goes, in man. The complex processes of digestion, mastication alone excepted, and assimilation; the circulation of the blood; respiration; reproduction; the phenomena of sleep; the conservation and repair of the organism, etc., are under the dominion of, so-called, instinct, and are carried forward independently of consciousness, in the generally received acceptation of that term. This part of the human organism has been wrongly set apart as the exclusive domain of the organic or vegetative life; and the distinction has led to confusion and misconception, as already pointed out. It is needless to trace in this place the nervous connection between the ganglionic system and the cerebro-spinal system. It will be sufficient to remark that the brain and spinal cord are themselves organic, and depend on the harmonious operations of the lower ganglionic system and its dependencies for the performance of their prescribed functions. On the other hand, the lower corporal functions are performed independently of any necessary influence of the cerebral functions, as proved by the removal of the cerebra of birds and other vertebrates, and also by anencephalic idiots of the human species. Infants have been born alive with neither a cerebrum nor a cerebellum. Nevertheless, they lived several days and nursed regularly when the nipple was put into their mouth, and performed other "automatic" movements equally complicated.* Such beings, however, and animals that have been by surgical

* *Vide* Carpenter's *Principles of Mental Physiology*, p. 72.

process deprived of a cerebrum, have no *conscious* mind and will. The ego in them has lapsed. In the cases of anencephalic idiots it is never developed; in creatures surgically deprived of it, it is evidently taken away with the cerebral substance. This conclusion is inevitable. And if the psychical powers of mind have an existence after the final dissolution of the psychical substance with which such powers of mind are identified, the manner and mode thereof are beyond the ken of reason, or of scientific discovery, or interpretation.

But, have animals thus treated no unconscious mind and will? Are the phenomena of organic life which they manifest under such circumstances to be justly attributed to automatic or mechanical agency? Physiologists, in the main, say Yes: we, with no disguised diffidence, say No. The logic of analogy compels us to recognize in the similarity of the grey and medullary substance of the spinal cord and its crowning bulb—the medulla oblongata—to that of the brain, a similarity of functions—lower grade probably, but still similar; that is to say, *unconscious* mind and will. To us it seems unreasonable to suppose that an individual, or an animal, has no intelligent agency in what goes on in his organism unconsciously to himself; that those actions which he performs in his waking hours, as walking, winking, writing, playing on musical instruments, co-ordinating speech, etc., are automatic, or mechanical, because they are performed without disturbing his conscious attention. Why, all the phenomena of the sympathetic and spinal systems go forward un-

consciously in the most systematic manner possible to conceive in health: and we are never conscious of them until diseases set in and suffering comes!

The actions of the sympathetic ganglia and the spinal cord are automatic in the sense that those of a steam engine in action, or of a ship at sea, are automatic. * Put an engineer on one and a sailing-master on the other, and either of them executes a purpose, with infinitely less precision, of course, but in a manner analogous to that observed in organic forms. But in these instances the automatic actions of each are under the promptings of the grey and medullary substance of the man at the helm, or at the throttle valve. Are the automatic actions of the animal with the spinal cord and sympathetic ganglia less so? Remove these centres of will and sense from the animal, and if then the victim exhibits automata, or makes use of acquired or accumulated experience, the doctrines of the advocates of automatic phenomena of the decapitated animal shall be conclusively established.

On the other hand, the evidence afforded by trustworthy physiological experiments would seem

* Dr. Balfour Stewart likens a steam engine to a living being: "But while the one—the engine—requires for its maintenance only carbon, or some other variety of chemical separation, the other—the human being—demands to be supplied with organized tissue. In fact, that delicacy of construction which is so essential to our well-being, is not something which we can elaborate internally in our own frames—all that we can do is to appropriate and assimilate that which comes to us from without: it is already present in the food which we eat."—*Conservation of Energy*, p. 165.

fully to warrant the conclusion that the spinal cord is possessed of mind and will, executing an intelligent purpose—unconscious perhaps—but still, intelligent. The celebrated experiment of Pflüger, with a decapitated frog and acetic acid, to which we have already referred, is too well known to be recapitulated here. All agree that the animal performed very strange acts for an automaton. And it is well known, too, that doves eat and digest after their brains have been removed, provided always the food be put into their mouth. They do not know enough in their decapitated condition *voluntarily* to seek food, and that is no wonder to any one.

The phenomena of conservation and repair of the bodily organism, independently of conscious volition or direction, are well known and universally recognized. But purpose and intelligent design are everywhere apparent in them. Take, for example, the phenomena of a broken bone repairing itself, after a fashion, without the interposition of external appliances or aids. So likewise in that serious and most fatal malady or accident, intussusception—an accident rendered ten thousand times more fatal by the foolish interposition of art than it would be left entirely to the control of the spinal cord and the sympathetic ganglia—we see the most consummate exhibition of surgical skill in the method devised and executed by nature for its relief and cure! In injuries of the skin how wonderful is the skill displayed before our—we were going to say—astonished eyes, in performing anaplastic surgery! In a few days the lost cuticle is restored so perfectly

that no visible trace of the wound is left behind. These conservatory processes are all miraculous enough, performed as they are by hands so airy and delicate as to be all unseen, and by a process so miraculous as to escape the acutest sense; but their miraculous character would be augmented infinitely were they to go on without the intelligent presence and engineering skill of the spinal and sympathetic ganglia.

As the sensori-centres of the cerebrum may perform their functions—*think and feel*—without consciousness, giving rise to that misnomer, "unconscious cerebration" (just as if cerebration were ever conscious, except in mania!) of Doctor Carpenter, so the sensori-motor and sensori-mental functions of the spinal cord and its ganglia, in their normal state, are always performed without consciousness. And we do not know that we have such a system until it is disordered; then automata are without method; the acquired experience of the animal avails him nothing; the skilled hand has lost its miraculous dexterity—it is paralyzed. The individual cannot swallow, even if he consciously tries to do so—he has dysphagia; he cannot walk, nor perform other symmetrical movements, even with the most powerfully and painfully conscious efforts—he has locomotor ataxia; simple wounds will not heal—the parts are anæsthetic. Disguise the truth of the condition with Greek derivatives as we will, the fact remains that the automaton will cease its automatic actions when the directing agent of them has ceased its intelligent interposition and directing skill.

When we state that the development of the cortical substance of the cerebral hemispheres and the development of human characteristics go hand in hand, or are coincidental facts in the physiology of man, we state a proposition that carries with it quite the force of a truism. Inferences justified by analogy point unmistakably to that conclusion. Indeed, there is evidence bearing directly on the point at issue that forces conviction of its truth on the mind of every physiologist with whose writings we are acquainted. The number of the convolutions, their size, depth of their sulci, quality and quantity of the brain substance, are all important factors in the psychical powers of will, moral sense and intellectuality. The distinction or differentiation between man and man, and man and the man-like apes, turns mainly on the amount and quality of the cortex of their cerebra. From the brain of the lowest order of the monkey—the marmoset—to that of the highest order of the chimpanzee, the cerebral convolutions present every stage of progress with the intellectual progress of the types—the brain, from being almost smooth on its surface, as in the marmoset monkey, to the completely convoluted of those of the orang and chimpanzee—which fall but little below that of man, according to Professor Huxley.

It is due to the subject and to Professor Huxley, however, to note that, in his opinion the difference between man and the man-like ape depends less upon any structural divergence of their cerebra than upon the amount and weight of their

respective brains. "It must not be overlooked, however," he writes, "that there is a very striking difference in absolute mass and weight, between the lowest human brain and that of the highest ape—a difference which is all the more remarkable when we recollect that a full-grown gorilla is probably pretty nearly twice as heavy as a Bosjes man, or as many an European woman. It may be doubted whether a healthy human adult brain ever weighed less than thirty-one or two ounces, or that the heaviest gorilla brain has exceeded twenty ounces. This is a very noteworthy circumstance," he remarks, "and doubtless will one day help to furnish an explanation of the great gulf which intervenes between the lowest man and the highest ape in intellectual power." *

It is true, as Henle has pointed out, † that the brains of apparently very ordinary men have sometimes been found on examination to be every way superiorly developed to those of men of repute and learning. Such are the exceptions, however, to the rule. And may we not in all such exceptions discern the influence of heredity on the one hand, and the power of education on the other? If there is any truth in heredity, or virtue in culture, surely we should expect to find great diversity of cerebral en-

* *Man's Place in Nature*, p. 120.

† Henle's *Nervenlehre*, p. 163, cited. *Vide* Raue's Physiological Psychology, *North American Journal of Homœopathy*. New Series, No. XXII. 1876. p. 335. Henle's attention was called to the anomaly by observing that the brain-convolutions of the celebrated Gauss were inferior to those of "a young nameless German."

dowment at birth; and an individual with an endowment originally superior might, by inferior advantages, training, etc., be found subsequently altogether inferior to one less happily endowed originally, but who had been thoroughly trained and cultivated. "A man born dumb," says Professor Huxley, "notwithstanding his great cerebral mass and his inheritance of strong intellectual instincts, would be capable of few higher intellectual manifestations than an orang or a chimpanzee, if he were confined to the society of dumb associates. And yet there might not be the slightest discernible difference between his brain and that of a highly intelligent and cultivated person." * Henle evidently overlooked these considerations, or he would not have been so surprised to find the brain of a poor, unknown German anatomically superior to that of the celebrated Gauss. He may have been a Newton or a Gauss in the rough.

The phenomena of arrested development, or congenital idiocy, in which the higher nervous centres have failed to appear, are exceedingly interesting in this connection. The mind of such creatures is a blank, so far as the possession of the psychical powers of thought and sentiment, which are correlated by the higher nerve-centres, are concerned. The degree of psychical manifestation, in every such instance, is always in proportion to the degree of cerebral development. Marshall examined the brains of two idiots and found them inferior in cerebral development to those of the ape, "being in this

* *Man's Place in Nature*, p. 122.

respect more simple than the brain of the Gibbon, and approaching that of the baboon." These microcephalic idiots exist in great variety, and present every stage "of descent from man to the apes." Mr. Paget describes the brain of an idiot which corresponded to that of a fœtus at its fifth month of utero-gestation. And cases of idiocy are referred to by Dr. Maudsley, as common inmates of most large asylums, which exhibit some of the traits of the ruminants, such as bolting their food and retiring to a secluded corner, and bringing it up in their mouths again to remasticate at their leisure. *

A remarkable case of arrested development, or idiocy has been recorded by the celebrated Pinel, which we find cited by Griesinger: "An idiotic girl, eleven years of age, resembled by the form of her head, by her desires and capacities, a sheep. She manifested an aversion towards animal food, ate only vegetables and drank nothing but water; her whole speech consisted in *bé, ma, tante*, whereby she showed her attachment to her nurse. She also, like a sheep, laid her head on the abdomen of her nurse; when fighting with other children she butted them as a sheep does; when wishing to fall asleep she curled herself up on the floor. Her back, shoulders and loins were clothed with a kind of soft black hair, one or two inches long, which much resembled wool. †

An equally interesting case of idiocy is described by Dr. Mitchell, deputy commissioner in lunacy for

* *Body and Mind*, p. 47.

† *Mental Pathology and Therapeutics*, p. 267.

Scotland. The face, physiognomy, gestures and habits of this creature closely resemble those of the ape. "He grins, chatters and screams like a monkey, never attempting a sound in any way resembling a word. He puts himself in the most ape-like attitudes in his hunt after lice, and often brings his mouth to help his hands. He grasps what he brings to his mouth with an apish hold. His thumbs are but additional fingers. He has a leaping walk. He has heavy eyebrows, and short hair on his cheek or face. He is muscular, active, and not dwarfish. He sits on the floor in ape-fashion, with his genitals always exposed. He has filthy habits of all kinds. He may be called an idiot," continues Maudsley, "of the lowest order, and there is a mischievous brute-like intelligence in his eye. His head is not very small, its greatest circumference being twenty inches and a half; but in shape it strongly resembles the ape-form of abnormality." *

Dancel communicated to the *Académie des Sciences*, Paris, 1843, a notable instance of arrested development, or idiocy. It was that of a young lady, aged twenty-four, "whose development proceeded normally up to the age of three and a half years," when it suddenly ceased. Her mental state was that of a child at that age; her body increased in size somewhat. And Baillarger presented to the *Académie de Médecine*, in 1857, an instance equally instructive in this connection. It was that of a lady, age twenty-seven, "who had the intelligence

* *Maudsley's Body and Mind*, pp. 47, 48.

and inclinations of a child of four years; she was about three feet high—the body very fat: the second dentition commenced when she was eighteen, and at twenty-seven was not complete." And Griesinger saw a remarkable case of this kind, "in which in consequence of a blow on the head in childhood, the development, which had till then been normal, was completely arrested." *

An interesting similar phenomenon came under our own observation. The case is that of a young man, aged thirty-two years, who has not grown intellectually since the age of twelve, at which time he was unusually bright. His manner and habits are those of a young boy; he exhibits the same inapplication; the same absence of any settled purpose; the trifling, indecision of a child. He is sometimes gay and frolicsome like a child; at other times morose and ill-natured, as a child is occasionally apt to be. He is totally incapable of doing anything but the most unimportant errands; and cannot care for himself. The cause of the disaster is obscure, but is supposed to be the early indulgence of a nameless vice.

Pathological examinations of these "accidents" of nature reveal a curious state of the encephalic organs. Very grave psychical defects are not always associated with defects of the substance of the hemispheres, though the latter are not unfrequently entirely wanting. Förg cites a case from Bianchi, in which the corpus callosum was wanting; so also were the pituitary glands, the pyramids, and the olivary bodies. And of the pons varolii there

* Griesinger's *Mental Pathology*, etc., p. 377.

was only a trace. The hemispheres of the brain, and the thalami and corpora striata "were run together in one mass." Förg also gives a case that came under his own observation, possessing an equally anomalous cerebral development. It was that of a girl seventeen years of age. In her brain the middle fore part of the corpus callosum, the septum and the fornix were entirely wanting; only a rudiment of the white commissures of the gyrus fornicatus existed; the island of Riel was atrophied; the convolutions were absent, or irregularly grouped; the lobes of the cerebellum were unsymmetrical, etc. Her body was also unsymmetrical. She was profoundly idiotic. Riel, Paget, Henry, Solly, and others report cases of moderate idiocy, in which the corpus callosum, septum lucidum, fornix, etc., were defectively developed. Defects of the corpus callosum seem to be the most constant fact in the anatomy of weak-minded people. *

Another important physio-pathological fact in this connection is that of atrophy of the brain subsequent to amputation of a limb. It would be difficult to find in the long catalogue of physiological phenomena a fact which proves more conclusively the unity of man and the mutual dependence of body and mind than this. If a leg or an arm be amputated, the hemisphere on the opposite side of such amputation becomes atrophied. The want of its normal stimulus to action being withdrawn in the loss of a limb, it falls itself into decay from disuse, just as a muscle dwindles for lack of exercise.

* *Vide* Griesinger's *Mental Pathology*, etc. p. 356, *et seq.*

M. Luys stated to the Société de Biologie, Paris, during one of its sessions in December, 1875, that he had found in autopsies of old persons, who had many years previously undergone amputation of the shoulder or a limb, atrophy of the opposite side of the brain "and that he had already collected a dozen of those cases. It was produced only some fifteen or twenty years after the amputation."* The reciprocity and mutual dependence of mind and body are thus disclosed. The destruction of a sensori-motor centre paralyzes and wastes the part which it controls; the destruction of the part which supplies the stimulus of that centre is equally destructive, in turn, to it, as one would suppose from *a priori* reasoning.

Facts of this and of analogous character might be adduced almost *ad infinitum* in support of the proposition, seemingly self-evident, that structural deviations and changes of the brain are always accompanied with corresponding deviations and changes in psychical endowment. Many who admit the inseparable connection of brain-structure and psychical power are unwilling to accept their relation in the order here set down; preferring to reverse the order of cause and sequence, after the manner of the old physiologists, and to regard brain-structure as a sequence of mind-force in the order of development. Howsoever erroneous and unwarrantable that procedure may be, in view of all the facts and the order of their invariable procession, it is the one

* Vide *Journal of Nervous and Mental Diseases*, p. 346. April, 1876.

adopted and maintained by the devout adherents of the old—and all but obsolete—orthodox school of physiologists. In its maintenance, assumption is pitted against observation; opinion against nature; prejudice against experience; philosophy of a misguided, distorted fancy, against the law of induction and evolution. Its advocates are compelled to believe, or rather to maintain, that the idiot is not in fact the inferior being that he seems to be, though he is so frequently wanting in self-consciousness and knows nothing of that personality which the normally constituted being *feels*, and which asserts itself in the emphatic "I," "ME," "MYSELF." They are forced to defend the absurdity that he is not, in fact, wanting in the mentality which he fails to manifest by reason of the inconvenience,—quite temporary,—of not having the necessary corpus callosum, or cerebral substance; that, in truth, the mind of the idiot is actually *there*, in his encephalon, imperfect or wanting though the latter be, with all its psychical powers of thought and feeling intact, though latent, ready to take possession of its tenement at the proper time, when nature shall do justly by her waif and provide one for him; that the mind is waiting, as it were, Dame Nature's pleasure, to step in to occupy and assume control of the now vacant cerebral cells, when they shall have been kindly provided for it! And if they never come; if the tenement is never fitted for the occupant—the wronged spirit—in the earth life, the complete dissolution of the imperfect body shall be the signal for the idiot's complete emancipation. His wrongs

shall be righted—redressed—on the other side of the life sensuous. Symmetry of form and fullness of mentality shall then triumph over that which was in the flesh a gross distortion—an abnormality! If this view be tenable, who knows but Pinel's girl-sheep may not in truth be the equal of Jeanne d'Arc? the man-monkey, described by Mitchell, a Webster or a Demosthenes in disguise? Or that the biped and hairless ruminant, cases which Dr. Maudsley says are so numerous, may not in reality possess a mind superior to that eloquent writer himself? But, have we any right or warrant in science or philosophy to indulge such rose-water hopes for the destiny of these miserable wrecks of humanity? In predicating a rehabilitated future for them are we not influenced by a wish to serve a favorite hypothesis? When assumption usurps the functions of observation and induction, where is the absurdity to which one is driven to end? The view we present of the subject may not be especially consoling to brainless people, nor comforting to their relations and friends. But one should seek truth in philosophy, not consolation; and treat nature as though she had functions to perform other than those of doing the bidding and correcting the blunders of those puny creatures in human form who aspire to be men and women in total disregard of the conditions which infinite Wisdom prescribes. Let such people seek in religion the commiseration they can never hope to find in science or philosophy.

The evidence drawn from analogy, however, not only associates and identifies the character of an

individual with the size, quality and condition of his brain and nervous system, but also connects his special attributes of mind with corresponding sensori-thinking (the "ideo-motor," of Carpenter) and sensori-motor centres. Hence, for every distinct, mental attribute, there must be a corresponding centre from whose function the attribute or psychical power is derived, or to which it is related. Dr. Alexander Eckers, of Baden, an eminent anatomist, commits himself to this view unreservedly. He writes: "That the cortex of the cerebrum, the undoubted material substratum of our intellectual activity, is not a single organ which enters into action as a whole with every psychical function, but consists rather of a multitude of organs, each of which subserves definite intellectual processes, is a view which presents itself to us almost with the force of an axiom. The opposite hypothesis of a single organ for the multiplicity of the intellectual functions, would mark a standpoint about equally advanced with the abandoned conception of a 'vital force.' If, however, as we think is undoubtedly true, definite portions of the cerebral cortex subserve definite intellectual processes, there is a possibility that we may some day attain a complete organology of the brain-surface, a science of the localization of the cerebral functions. Such a science—that is, a knowledge of the psychical organs of the brain in all their relations—is certainly one of the most important problems for the anatomy and physiology of the next century, the solution of which will work no small transformation in psychol-

ogy." * The prediction of Professor Eckers is being rapidly fulfilled. The localization of these centres is already so advanced that the brain pathologist is able to put his finger on many of them and to utilize the knowledge in surgical operations.

Moreover, there is good reason to believe that the powers of thought, and, indeed, of all the higher elements of mind, are associated with the grey substance of the cerebrum; that the existence of one is consensual with the other. The manner in which consciousness or ideas are generated or evolved by the little cells of the grey cortex must forever be an insoluble mystery; no more so, however, than are the molecular changes in the wires of an electric telegraph. Professor Griesinger, who is skeptical, alike of materialistic hypotheses respecting the nature of mind, and of the utility of transcendental views in its interpretation, observes that it is absolutely incomprehensible "how a material, physical act in the nerve-fibres or cells, can be converted into an idea, an act of consciousness." † And so it is. But is it not even more incomprehensible how an idea, or an act of consciousness could be evolved without the agency of the nerve-fibres or nerve-cells? We think so. Of two inscrutable hypotheses the rational mind naturally accepts that which seems the most rational, or which has the most plausible reasons in its support.

So, likewise, the hypothesis gains credence daily that the white substance of the cerebrum is the seat

* *Cerebral Convolutions of Man*, p. 7–8.

† *Mental Pathology*, etc., p. 5.

of conscious volitions. The fact that it is composed of minute fibres, instead of cells, and that these fibres may be traced up to the grey substance and down to decussations with those of the medulla oblongata, and the analogous substance of the spinal marrow, whence they decussate with motory nerve-fibres from the extremities, lends anatomical support to that view. Moreover, experiments with the electro-magnetic current upon etherized animals give additional support to the hypothesis, carry the matter, indeed, beyond the hypothetical, almost into the domain of demonstration. If the well-known experiments of Dr. Ferrier, of England, and others of later date, prove anything regarding the functions of the cerebrum, it is that of localizing the higher motor centres in the cerebral hemispheres, and the subsistence of a plurality of such centres, not only in respect of co-ordinating muscular actions, but also in respect of purely mental, or sensori-motor impulses. We have not space in the present article to give the details of the experiments of Dr. Ferrier, which go so far to prove the truth of this doctrine; nor is it necessary to recapitulate them, as they are easily accessible to every one interested in the subject.*

Thus does the slow and toilsome progress of science confirm the conclusions of deductive thinkers and philosophers—the true pioneers of discovery! The learned Dr. Gall, more than half a century

* *Vide* Vols. III. and IV., *Medical Reports of the West Riding Lunatic Asylum.*—See also on this subject, *Familiar Forms of Nervous Disease*, by M. Allen Starr, M. D., Ph. D.

ago, boldly contended for the doctrine of sensori-centres, or "organs," as he called them, in the brain, conformable to the physiology of his day; and if he and his learned, but much derided, confrères were in error respecting their precise seat and nature, they were not altogether wrong in the broad generalizations of the truth itself. They saw dimly and imperfectly what others now see clearly and distinctly. Genius is usually the discoverer of truth; induction follows on with slow verification.

PART III.

BODY AND SOUL.

"All the functions of the nervous system are as dependent upon its structure and nature, as the accurate indication of time upon the construction of the chronometer."—*Prochaska.*

PART III.

BODY AND SOUL.

THE unity of body and mind is still further disclosed in the relation which subsists between physical and psychical disease. The evidence of pathology on this subject is in perfect accord with that of physiology—which has already been considered; the phenomena of disease being due to abnormal or unhealthy conditions and actions of the bodily organs and functions. Sickness presents, in fact, the obverse side of human nature, and comprehends not only bodily deformities and defects and their sequences, aches, pains and disabilities, but also abnormal molecular actions and changes of the bodily substance and tissues in every part, giving rise to nervous and cerebral disorder and abnormal phenomena of the soul, or psychical life.

This fact should be constantly kept in view. It has been recognized from time immemorial by medical philosophers, but continually ignored by the medical novitiate. M. Broussais never uttered a sentiment more true than when he wrote that "Man

is but half understood if he is observed only in health."* It may be said to be axiomatic. The truth which it involves is quite as significant in its bearings on the doctrine of the monism of man, or the unity of matter and force, and of the physical and psychical, as any axiom in physiology. Medical psychology, in fact, owes its existence to pathological phenomena, upon which this axiom of Broussais is predicated, and from which it derives all the wealth of meaning with which it is so pregnant. The symptomatology of a sick man does, indeed, reveal his essential monism—oneness, homogeneity, mental and physical, body and soul—so unmistakably that it is difficult to reason one's self out of this conclusion by the most consummate use of word-symbols which the physiologist has yet been able to devise.

Griesinger has very wisely remarked, in respect of diseases of the mind, that "nowhere is the desideratum strictly to keep in view the individual of greater importance than in the treatment of insanity; nowhere is the constant conciousness more necessary that it is not a disease but an individual patient; that it is not mania, but an individual who has become maniacal, that is the object of our treatment."† The observation is equally applicable to disease of the bodily organs: for in every instance of so-called physical disease have we a case of individual disorder—an individual sick, more or less, in every part; and the more finely strung—organized

* *Irritation and Insanity.*

† *Mental Pathology and Therapeutics*, p. 462.

—is such an individual, the more surely does a particular sickness become a general disorder. Hahnemann recognized this fact when he observed that, "Sometimes a man, who is patient while in the enjoyment of health, becomes passionate, violent, capricious and unbearable, or impatient and despairing, while he is ill; or those formerly chaste and modest, often become lascivious and shameless. It is frequently the case that a sensible man becomes stupid in sickness; whereas a weak mind is rendered stronger, and a man of slow temperament acquires great presence of mind and resolution."* If there are any exceptions to this remark they will more often be found in disease of the higher nerve-centres than in disease of the lower nerve-centres, or bodily organs; for mania of the intellect, as indicated by delusions, may and does sometimes exist with little or trifling disturbance of the lower corporeal functions; but, on the other hand, it is rarely the case that a so-called corporeal malady, can exist, even the most trifling, without disturbing—sometimes in a manner most marked—the intellectual, as well as the other cerebral functions.

In all maladies we have therefore a unit—an individual—to deal with, whose mechanism, at first perhaps a supposed inconsequential part of it, has become disordered, as the hand or the foot, the mucous membrane or the skin, and the being, the living, moving, thinking "automaton" is abnormally affected by it in every part. So close is the "sympathy" between the central and the remote

* *Organon of Medicine*, Sec. 210.

ganglions, so intimate is the relation of cognition and sensation; so homogeneous, in other words, are substance and being throughout the living organism, that a disorder of a part is an injury to the whole.

As an illustration of the coëxistence and mutual dependence of physical and psychical states, we cite the following case which, though based on observation, shall be supposititious. Let us suppose a delicate, dark-complexioned man, who has a slight swelling of the phalangeal joints of the great toe. The swelling is red and hot; sensitive to touch and motion. The whole limb, to which the sensitive member belongs, aches and pains in evident sympathy with the inflamed joints. This is local and particular. Should the condition of the organic functions be inquired into, they would evidently be found deranged, every one, the manner of which every experienced physician could easily foresee—presuppose. The more purely psychical condition, however, could not be so easily apprehended, from the great complexity of moral symptoms which is often contingent upon such an affection, and which are under the control of the individual, more or less. The sympathetic system may be so deeply involved by this little ailment as to completely unbalance and derange the psychical life of the patient for the time being. The individual may in consequence lose the control of his will, and fall under the sway or dominion of feeling, preternaturally active, and therefore disordered. He faints possibly in the attempt to move; is easily excited; is anxious and apprehensive without just cause; often impatient,

quarrelsome, despairing and complaining. If he were amiable before, he is quite otherwise now. Nothing gives him either pleasure or satisfaction. Life itself is a distress—one long sigh of unrest. His consciousness is overwhelmed with the morbid impressions of his disordered body. He has lost his normal taste and relish. The books he used to enjoy have become uninteresting and insipid. The friends he loved, and whose companionship was a necessity, no longer seem the same to him. He becomes estranged from persons and things. Their presence is displeasing, irritating, and provocative of uncontrollable resentment. Instead of being trustful and loving, he is resentful and suspicious—possibly profane. Ill-nature and despondency have taken the place of a disposition naturally buoyant and hopeful. A disordered imagination has supervened, conjuring up wild, extravagant and most unnatural horrors, upon one whose fancies were full of life-like pictures, and whose conceptions were ordinarily pleasing, rational and enjoyable. The patient is full of whims, and needs to be humored, as much as a child during its first dentition. Psychically, he presents a very common form of mental alienation ; physically, he is simply gouty.

Similar forms of mental alienation are observable among children suffering from diseases peculiar to childhood. The seat of those diseases is the very citadel of the grand sympathetic, the centre of emotional life ; and when it is disordered, the natural disposition suffers in a manner with which parents are but too well acquainted. The period of

the first dentition is one during which the functions of the nerves of organic life are most easily disturbed, and the consequent perversion of the disposition is most strongly marked. The presence of worms in the intestines, for example, is indicated by symptoms subjective as well as objective. In other words, while their presence in the economy may be suspected from dilated pupils, inflamed nostrils, offensive breath, constipated and inflated bowels, morbid appetite, convulsions, etc.,—fickleness, "mulishness," inordinate mischievousness, insomnia, delirious sleep, etc., are indications of their presence, equally characteristic. So likewise, the "sour stomach" and constipation of children affect the disposition far more seriously than they do the purely physical life. While the physical symptoms produced by those causes may be sufficiently distressing, the psychical symptoms are still more so. A lovable child may be transformed by them into one of mental characteristics quite the opposite. Nothing is more common to childhood, in fact, than these moral transformations by reason of disorders of the functions of the "vegetative," or sympathetic system. The records of the nursery tell a fearful tale, and upon them was probably founded the doctrine of total depravity, which has long been such a favorite among Christian theologians, and which has served the double purpose of a theory of family government and an excuse to practise upon it, in a summary way, as old as Solomon.

It should be observed, moreover, that sin and iniquity are often due to disease; and that the rude,

wayward impulses of children arise, for the most part, from disorders having their seat primarily in the physique. A child, possessing a disposition naturally kind and obliging when he is well, becomes cruel and disobliging when he is ill; one with a sweet and amiable disposition, becomes morose and irritable; the bright and industrious lad becomes thriftless and stupid; the generous-minded are perverted into the greedy and covetous. All the forms of sin and wickedness recognized by the law, or known to the theologian, may be due in children, too young to have obtained the mastery of their morbid emotions, to derangements incident to digestion. Nor is this remark inapplicable to certain children of a larger growth; for criminal statistics show that crime is largely the effect of derangements caused by "strong drinks"—in most instances the victim being amiable and well-disposed until his stomach and sympathetic system are "fired" and their functions perverted by alcohol. When will theologians and law-makers realize that only a normally constituted human being, in a normal condition, is a responsible creature and amenable to the moral or criminal code? The day may not be near when a philosophy of life and its phenomena, moral and physical, so opposed to that of the present, shall find favor in the eyes of such classes. But when it does come, as come it must in the natural progress of ideas, we venture to predict, in the management of refractory children, an increase in the use of physic and a decrease in that of the rod, or "spanks;" and, for the cure and reformation of adult delin-

quents, the building of fewer jails and penitentiaries and more asylums and hospitals.

These physical effects—even to the degree of complete transformation of the natural disposition—are frequently observed in adult life in the progress of chronic maladies. The vicious become amiable, and the amiable, vicious; the irritable and combative become kind and obliging; the weak-minded become strong-minded, and the strong-minded, weak-minded. Nor are these peculiar effects of physical disease confined to any particular class of disorder. There are few diseases of either animals * or man, with which we are acquainted, which are not accompanied with psychical symptoms of some kind or other—favorable or unfavorable; and sometimes the psychical symptoms are more clearly characteristic of the malady than are the so-called physical symptoms. The parts of the bodily organism are so intimately related to each other, and the influence between each part and the *ensemble* is so reciprocal that an affection of one is immediately felt by the others. If there is any class of diseases that does not modify the psychical character of an individual it is that peculiar to the spinal cord, or its meninges. Several cases of spinal irritation, some of which present well-marked symptoms

* The celebrated horse, Longfellow, is a notable illustration of the difference in point. In his race with Harry Basset, he met with a serious accident, which disabled him for a time. But, although he recovered from the wound and became thoroughly well and sound, his temper was so vicious that it was dangerous for strangers to go near him. Previous to the injury his disposition was amiable.

of spinal meningitis of the upper half of the cord, of a chronic character, accompanied with episthotonos, and emprosthotnos, have come under our observation, in which no decided influence of the disease upon the cerebral functions was discoverable from the beginning to the end. The patients were mostly women; and the degree of patience under prolonged sickness, and fortitude under frightful sufferings, was so noticeable as to become the subject of remark by the most casual observer. Their minds were clear and unclouded, brighter, indeed, if anything, than before or after the attack; and the general balance of all the mental powers, of the moral perceptions and the intellect, was surprisingly preserved throughout. In two of these cases the sufferers would frequently come out of the most violent spasms with faces beaming with good nature, and resume their chat with some friendly caller as if they had been indulging a frolic, instead of enduring a period of agony. Their exemption from the nervous depression and moral demoralization so frequently observed as the effect of prolonged and tedious chronic disorders, was a subject of profound interest to us. Formerly there was no degree of praise to which, in our estimation, the fortitude of these patients did not entitle them. Since discovering its rationale, however, we are less inclined to admire the self-control of these victims under such circumstances, and more disposed to believe that the credit given them for its exercise, under what appeared to be trying circumstances, was more easily earned than had been supposed.

It is quite otherwise with diseases of the "vegetative system," or disorders of the functions of "organic life," as we have seen. The most inconsequential affection of this part of man's nature disturbs at once the balance of the emotions; and if actual mental derangement does not follow upon it, a mental state is induced which is closely allied to mental derangement. The psychical phenomena of gout and dentition have already been referred to, and they afford a very good illustration of the mental effects of diseases affecting the chylo-poiëtic, or digestive system in general. The moods in such affections are proverbially sullen, fickle, irascible and irritable. The dark side of life comes into undue prominence, and the sufferer is, accordingly morose and melancholic. The central ganglions of the sympathetic are profoundly depressed; the blood is disordered by functional disturbance of the liver and kidneys, either as a sequence or as a cause of the ganglionic depression; and the latter send disordered messages to the sensorial centres, which, together with the supply of unwholesome blood to the circulation, depress in turn their functions, and thus corrupt all the processes and phenomena of the individual life. Thus, in good health an individual may be a paragon of excellence in all that constitutes a noble man or woman and be suddenly metamorphosed into a being of quite opposite moral characteristics, when an affection of the nature has come upon him or her. Whereas, in good health he was in possession of lovable characteristics, then he is possessed of characteristics

him to that abnormal conception of diseased men of ancient fame—the devil. Even should he be able to maintain his self-control and suppress the expression of his evil thoughts, in act or speach, the morbid whisperings, instigating to mischief, go on in him without abatement; and he finds it most difficult to persuade himself, or to be persuaded, that he is not really tempted of the devil, so thoroughly is he possessed by impulses attributed to that celebrity.

An old patient of the writer, a lady whose moral character in health is the most unexceptionable, suffers from an occasional attack of icterus. During the attacks, which are sometimes prolonged, her moral character undergoes a complete transformation. From being prayerful and devout she is inclined to upbraid the Deity. She cannot, as usual, enjoy her devotions. The heavens are as brass to her. She is capricious and resentful; takes the kindest overtures in bad part; is overbearing, arrogant and reproachful toward those she once loved best, but from whom she is now alienated. She has repeatedly confided to us her secret thoughts—the morbid impulses to acts of vice, the commission of which would be a grave misdemeanor and inevitably consign her to the ranks of the low and degraded—impulses which we are confident are entirely foreign to her normal nature—and confessed, with the utmost consternation of manner her change of feeling, remarking that she was no longer herself. Nor was she. Mary Magdalene was not more "posed" than was she. During all these periods of

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profound mental agony the intellectual functions were apparently unimpaired.*

It is interesting to observe that these transformations of the moral character by reason of bodily disorder are often affected without bodily pain, or physical discomfort. The sufferings are described by the unhappy patients as of the extremest type, but wholly of a mental character, being caused by reflex influence of the sympathetic upon the higher sensorial functions. Despine remarks this peculiarity of reflex, psychical disorder, and observes:

"Elle donne la raison pour laquelle les affections des organes qui reçoivent plus spécialement leurs nerfs du grand sympathetique réagissent facilement sur le cerveau et sur ses fonctions, au point de changer complètement le caractère de la personne, de la rendre irritable, colère, bizarre, violente ou triste. Ces changements dans la nature instinctive de l'individu, par le fait des affections morbides dans lesquelles le grand sympathetique est engagé peuvent avoir lieu sans douleur physique, sans malaise important. La grossesse, l'époque menstruelle, la constipation, la presence des vers dans les intestins, quoique occasionnant à peine un malaise local, peuvent causer les changements le plus graves dans le caractère, et même la folie, chez les personnes dont le cerveau est très-impressionnable." †

Disease of the heart, particularly that known as *angina pectoris*, is very generally accompanied with excitable, anxious moods; not unfrequently with

* Now an inmate of an Asylum.

† *Psychologie Naturelle*, Tome I., pp. 440–1.

ill-humor and ungovernable choler, of which we have in history many conspicuous illustrations, notably the case of the celebrated Dr. John Hunter, and that of the mother of Lord Byron. In people with an apoplectic tendency these moods may be commonly observed; indeed, their liability to fall into a passion is characteristic. It is a species of insanity with them, often, in which feelings of irascibility, from very trivial causes, overpower the rational will and impel the individual to acts of violence. Individuals of this class are never without a grievance. It is a question of "honor" with them to resent a slight or an injury, although the latter may have no foundation except that of undue sensitiveness and a morbid tendency to envy, suspicion, jealousy, revenge, etc. That they sooner or later become paretic is a matter of observation. But paresis and apoplexia are diseases very closely allied, being more often associated with disease of the heart and vascular system than with disease of the cerebral substance. The authors of the sacred writings of antiquity, therefore, were not so far astray, after all, in ascribing wickedness to "hardness of heart," a "heart of stone," etc.; for this is literally true, often, as shown in autopsies of people with "hard" tempers.

But last, though not least in this category, are disorders of the sexual functions. The abnormal psychical phenomena, having their source in diseases of the womb, ovaries, testes and spermatic vessels, simulate the symptoms of every form of mental derangement and of moral disease, those of

intellectual derangement possibly excepted, even when such derangements are not actually and permanently induced by disease of those organs.

In women, mental deterioration from uterine disease is no unfrequent occurrence, even in the absence of brain complications. The strong character becomes weak; fickleness supervenes upon a judgment previously calm and clear; indecision upon resolution; pusillanimity upon fearlessness and courage; deceitfulness upon a frank, open manner. We believe that the habits of truth-telling and fidelity in the social and domestic relations are more frequently destroyed by irritable ovaries than by any native tendency to depravity in the female sex. The affections and dispositions are frequently alienated and transformed by such a cause, so that the victim dislikes what she formerly loved, or loves what she formerly disliked. Her life seems to run in morbific channels; her being seems to be inspired by abnormal impulses from these causes. If once she were fond of pets, she now dislikes them. She neither caresses nor cares to be caressed. If she formerly loved society, she now prefers solitude. Her relations with the things of time and sense have changed. Apathy has succeeded upon enthusiasm, indifference upon interest, misanthropy upon love and affection. These moral changes may be so radical as to involve the foundation of the moral character and lead her to ignore the affection of children and friends, or even neglect her duty to him whom she has solemnly vowed to love, even though he prove worse instead of better.

For some, to her, strange and unaccountable reason, she can no longer endure her husband's presence; his caresses are received with ill-concealed but uncontrollable aversion, if not with resentment.

Women, whose moral characters were above reproach, have thus, through abnormal impressions on the sympathetic system, been known to play the fiend incarnate during the first months of utero-gestation; exhibiting every species of demoniacal fury which a demoniacal cunning could devise. All the vile passions and abnormal emotions known to the human heart frequently gain the ascendency over the unhappy being, under such circumstances, and incite in her the desire to indulge in petty violence, obstinacy, malice and revenge; or to exhibit a spirit of envy, jealousy, quarrelsomeness, resentment, arrogance and selfishness; or a faithless, lying, reproachful, overbearing, fault-finding, complaining mood; a disposition, often, when worse traits are suppressed, to annoy, tease, hinder, dispute, destroy property and engage in strife and weak contention *ad infinitum*—conduct altogether foreign to her normal state. And it is worthy of note, that these unhappy forms of alienation are more frequently observed among the better classes. There seems to be some connection between a life of ease and luxury, and moral degeneration. Be that as it may, there can be no doubt that the mode of life of the affluent classes engenders sexual weakness and derangements in both men and women, perverting their moral nature and impair-

ing their powers of reproduction,—their capacity to produce a healthy, hardy progeny.

In men, psychical disorder consequent upon disease of the sexual organs can hardly be less serious than in women. There may not be absolute hysteria in men, as in women, though it does sometimes occur; but the moral breakdown is as complete and equally common. Take, for example, that weakness known as spermatorrhœa: What ravages does it not inflict upon the cerebro-spinal system, as well as upon that of the sympathetic! In destroying the tone of the organic system, so-called, it impairs the vigor of the intellect and of volition, and corrupts the centres of emotion and of moral feeling. This disease causes in men of naturally strong mental character the same degree of fickleness and instability, the same want of fidelity in their relations of business, or love, or friendship, which we have ascribed to women suffering from an analogous disease. The courage which peculiarly distinguishes the ideal masculine character,—the courage of opinion and conviction; the heroism to brave danger and encounter obstacles; the daring to do what one believes to be right when all the rest of mankind believe it to be wrong; the resolution to work and to persevere, for work and perseverance's sake,—these high qualities all crumble into decay in an individual whose sexual system has become enfeebled by disease. The purpose of such a one is weak and vacillating; he is uncertain to promise and still more uncertain of keeping his promise; he has lost the energy of manly loving, manly working and manly

daring; he comes to doubt himself, and therefore everything else—the sanctity of truth, fidelity, honor, conviction; he believes all men are miserable dullards; and if he is suspicious of all men, all men, sooner or later, become suspicious of him, and especially all women. He loves nothing long, but everything by turns; now excess of passion, fitful and capricious; then, disgust and loathing. He has not the strength to think out new processes, nor the resolution to carry out old ones. His habits of business and enterprise reverse the axiom of business life, for he never does to-day what can conveniently be put off until to-morrow. That independence of thought and action; the manly self-reliance; the strong love of life and the enduring faith in virtue; the calm clear head in trouble and adversity; the courage to live while he can and to die when he must without fear or reproach of the gods, or complaint or distrust of the providences—all the elements of character, in brief, which make a man a man, and a tower of strength to his race—a refuge for the weak in trouble and adversity—lapse in part, or die out altogether in one who suffers from the graver forms of spermatorrhœa; and in their place succeed weakness, irresolution, despondency and despair. Many forms of vice may follow also, but more often, especially in the graver or more settled forms of the weakness, no serious offence against morality is committed. He may, on the contrary, have excess of the pious element and be moral even to prudishness. While he is weak enough to be miserable he is too weak to be absolutely immoral. More

often he is so good as to be absolutely good for nothing.

We believe that the influence of sexual disorders of men, as a cause of insanity, has been overrated by medical writers. The clinical records of asylums, of course, show as a matter of fact an almost constant association of the two maladies in the same person; but it is by no means always easy to determine with anything like certainty the relation which the two states sustain to each other. While, on the other hand, there is good reason to believe that medical writers underrate the influence of disorders of the sexual functions on the ætiology of the petty vices of men and women so prevalent in civilized life. The insane must have an insane temperament, bias or neurosis, to give direction to a morbid cause. When no such predisposing bias to insanity exists, insane effects from any of the usual exciting causes of insanity cannot be counted on with certainty. Given the predisposing bias or neurosis, and the causes which produce any form of disease may likewise produce insanity. It is a matter of observation that some of the worst forms of sexual disease, both organic and functional, exists both in men and women without exciting any insane tendency. They cannot be found, however, unaccompanied with more or less impairment or demoralization of the psychical character. This, however, while it is in fact an insanity, is so outside the confines of technical interpretation.

In respect of the changes in the *morale* of an individual, through the influence of disease of the

corporeal organs, Griesinger very truly observes, that they "constitute some of the most fundamental elements of the pathology of insanity. They are the key," he remarks, "to a knowledge of the predisposition to mental disease resulting from the most diverse bodily diseases, and of the mode of action of psychical causes."* The rationale of the effects of functional disease upon mental derangement is perfectly clear to the mind of every medical man. Equally clear is it to him why a grave affection may exist in the cerebral centres, or even in some parts of the spinal system, without perceptibly disturbing the bodily functions, or demoralizing the emotional states. If the normal operations of the functions of organic life be preserved, a certain stability of the emotions will be assured, even if emotional insanity, by far the largest variety of insanity, be not an absolute impossibility. Indeed, we must maintain, without fear of contradiction, that the protean forms of emotional insanity, and the disease of the organs of the so-called "vegetative life," sustain the relation of cause and effect, the cause being in the domain of the latter; and that when the relation of cause and effect is inversed and the emotional disturbance precedes the bodily disturbance, the former cannot become a fixture in the mind until the corporeal powers are seriously impaired.

Despine has well said that, "Les sensations physiques de plaisir et de douleur qui accompagnent les impressions de l'âme pendant les manifestations des sentiments et des passions, devaient donc avoir pour

* *Mental Pathology and Therapeutics*, p. 58.

siége primitif un organe nerveux autre que el cerveau : c'est principalement aux nerfs du grand sympathetique qu'appartient cette fonction ; et, comme tous les phénomènes auxquels préside ce système sont indépendants de la volonté, les phénomènes de l'émotion le sont aussi."* Such being obviously the case, the ordinary exciting causes of emotional insanity, as fear, grief, anxiety, vexation, disappointment, etc., through their influence in depressing the functions of the grand sympathetic, must permanently impair the functions of the bodily organs ere the morbid effect of such exciting causes would be able to make a fixed and permanent impression on the higher cerebral centres. Griesinger, himself, has recognized this fact in admitting that when we are influenced by "external causes capable of exciting an emotion, . . . very much depends upon these existing, habitual or transient cerebral states which are excited by the bodily conditions, whether the emotion will be constant."† It is obvious that in good health it would not become fixed, but be altogether transient, else we should all become insane at the loss of a friend or fortune, or go mad when crossed in love.

Do we sufficiently appreciate, therefore, man's dependence on his organism, the lower organism, that part of his being which it was the fashion in the past to affect to despise, for sanity—for that without which life would hardly be worth living? The pleasures of existence are so closely related to the

* *Psychologie Naturelle*, Tome I., p. 439.

† *Mental Pathology*, etc., p. 57.

things of time and sense, to love and appetite, joy and hate, getting and begetting, that without them earth would be a barren and cheerless waste to the most of mankind. What perennial happiness is that which springs from the association of parent and child, husband and wife, brother and sister, friend and friend, kindred and neighbor! What lovely and exalting emotions are engendered of conjugal love; the felicity of maternity and paternity; the pleasures of the senses—of seeing, hearing, eating and drinking; the sentiment of love and worship, which contribute so much to ennoble the character and fill up the cup of life's joys! These are the things that render life a boon of priceless value; that make a heaven for man on earth. Nevertheless, they have an origin—they take their rise, receive their inspiration, from his bodily organs, chiefly in his *viscera*, unpoetic as is the idea! We may becloud our faculties in tracing the phenomena of "reflex" and "automatic" actions, and confuse the meaning of the grand facts of our earth-life with learned disquisitions upon this function or that process; but then, when we have succeeded in reducing the phenomena of organic life to that of a machine, less simple and cunningly devised than that which turns brass into wires and wires into pins; or that which records the fluctuations of the gold market with such marvellous skill and rapidity; the truth is reflected back upon us, with something like its old force and significance, that within man's body—we might properly say his *abdomen*—springs that depth of feeling and wealth of emotion which makes healthy

human life the supreme joy and satisfaction it is. A heaven in which the sympathetic system and its dependencies—the abdominal viscera—are excluded, would be a dreary abode, a bore—we say it with perfect reverence—for any soul worthy of immortality. Let those deride the body and put off its crowning, therefore, whose faith is conserved thereby; but its symmetry and harmony, organic and functional, must be preserved if the kingdom of heaven is ever to be established upon earth.

The more one observes the phenomena of human life and studies the influence of the grand sympathetic upon them, the greater importance must one attach to the preservation of the normal condition of the corporeal organs. We very much doubt if bowels ever yearned with compassion, whose condition was abnormal. While, on the other hand, a well-developed healthy viscera is the source of more inspiration that is truly divine than people commonly suppose, we would have no one believe that the visceral organs are the exclusive source of divine inspiration. But we would like to see inculcated an increased respect for *that kind* of inspiration which comes from sound visceral organs. So close an analogy is there between a man's moral philosophy and the state of his abdomen, that one is often able to make a diagnosis of the latter from an examination of the former. Does not the sulphurous philosophy of John Calvin bespeak the yellow skin and stunted form of that small-livered man? Do not the sermons of a Beecher, an Edwards, or a Bethune, indicate striking peculiarities of organiza-

tion? The mental physiologist is compelled to answer such interrogations in the affirmative, no less so than to relegate to the domain of the abnormal pathological conditions, conceptions that are incongruous, incoherent, extravagant and absurd. He cannot escape the conclusion that rational conceptions are the outcome of normal mental conditions, no less than that irrational conceptions are due to abnormal mental conditions.

It will be obvious to every one who reflects upon the bearings of this subject that physical disease is a unity having two sides. It occurs to us that physicians, especially those of the very old school (we believe there is no *new* school in medicine to-day) are accustomed to view disease from one side only —the objective, physical. Thus have they divided diseases into two great kingdoms, according to their location. If in the head, and confined to the sensorial centres, it is psychical. If elsewhere, it is physical. This is a very grave error, which is due to ignorance of the functions of brain and nerves and the influence of the dualistic philosophy of soul and body—an error against which Samuel Hahnemann, the peer among peerless physicians—to his lasting honor be it said—expressly, though it seems, vainly, guarded his followers and coadjutors. Let us reaffirm that all the phenomena of a living body are altogether psychical; in health, normal; in disease, abnormal, but still psychical—and we may say, still physical, for the twain are one and inseparable. The division of the phenomena of health and disease into physical and psychical is only a convenience of

the intellect for the benefit of the observer. In actual practice, and when dealing with either class of phenomena, normal or abnormal, care should be taken to embrace the totality of the physical and psychical phenomena of both classes. The medical observer will often get a clearer insight of the causes of organic disorder if he bring to his aid the so-called reflex symptoms, or the psychical phenomena exhibited by them, and which are characteristic of the disorder under observation, and be able thereby, it is believed, to cure a malady, or at least to comprehend it, when otherwise he would fail to do either.

Griesinger has observed that the anatomical changes which indicate insanity, that is, which produce psychical anomalies, are naturally to be sought for within the cranium, in the brain and its membranes.* If it be true that structure and function are coëxistent and interdependent in pathological, as we have seen that they are in physiological phenomena,† we should naturally expect to find the proximate cause of all disease to consist in abnormal changes of structure and function in corresponding parts of the physical organism. And this is no less true in so-called psychical disease than in so-called physical disease. In those forms of insanity, therefore, which involve the integrity of the cerebral substance, the proximate cause of such derangement may be confidently looked for

* *Mental Pathology*, etc., p. 499.

† *Vide* Part II., in which the physiological side of this subject is discussed, p. 48.

in the seat of those functions,—the brain, or in parts in intimate sympathy with it; for if psychical anomalies can exist independent of the condition of their seat and source, there is no basis for psychological medicine, and the magnificent superstructure bearing that name, which the centuries of industrious research have reared, must fall to the ground for the want of a rational support, and be again succeeded by that horrible nightmare in philosophy, demonology, and the sooner the better. Nor is this result all that would follow as a logical sequence of the independence of psychical disease of the physical environment. The revival of the belief in bodiless forms, spooks, spectres, spirits, angels, imps and devils, would naturally revive imposture-medicine and bring back to mankind the sorcerer and conjurer. The physician would again be compelled to give way to the priest; physic to charms; the pellet to the amulet; the appliances of art to prayers and invocations. For mania, we should have *possession* of an evil spirit or madness; and the idea of medicine for a mind diseased would become an absurdity as great as it was in the time of Shakespeare. If we have securely ridden ourselves of the influence of this spectral philosophy in interpreting the phenomena of living beings in disease, as well as in health, it is due, permit us to observe, to the development of physiology and the growth of a belief in the invariable certainty of the relation of cause and effect in the human economy and the adequacy of reason to interpret that relation. Many forms of insanity, notably melan-

choly, hysterical and cataleptic mania, are not local disorders, or if local, they are identified with disease of the lower physique in the first place, even if the brain-substance and its membranes become involved in their later stages. Idiopathic insanity, or psychical derangement, involving the organs and functions of the higher nerve-centres, the seat of the moral and intellectual powers, must, we believe, depend on abnormal changes in those centres, in their substance or membranes, either functional and temporary, or organic and permanent. Careful dissection of the supposed seat of those centres has not always revealed the existence of such pathological changes, it is true. But how much such failures are due to the want of the means of detecting them; or of sufficient diligence and skill in the search for them; or of knowledge adequate to recognize and appreciate them; or to all these causes together, it is difficult to decide. The progress of discovery in this direction within a few years, since the invention and perfection of the microscope and other instruments of diagnostic investigation, has been such that we may reasonably assume that the repeated failures of the anatomist to find the proximate causes of mania and its allied diseases in the brain were due to errors of observation, and not to the absence there of those causes.

Then, when we reflect how wonderfully delicate are those nerve-cells and nerve-fibres, of which the cortex and medullary of the brain are constituted, and how slight are the molecular deviations requisite to produce psychical anomalies, we cannot

think it at all surprising that even such observers as Pinel, Morel and Esquirol should report cases of serious mental derangement occurring in persons whose brains were apparently sound. The surprise is, rather, that they were able to detect pathological changes in the cerebra of so many of the insane, in view of the inadequacy of the means of investigation to which they were confined. "We must consider," says Griesinger, "how easily many very minute but important changes—even exclusive of those which are only microscopically appreciable—may elude mere ordinary attention; and we ought, as a rule, to accept statements regarding the normal, or abnormal, condition of the brain from those only who, by the whole spirit of their writings, show that they are acquainted with pathological anatomy, that they acknowledge this preëminently, and that they know what is to be looked for and what is to be esteemed." Then he observes that recent discoveries of previously unknown changes have added new light on the pathological anatomy of the brain, and adds: "Just as we know for certainty that much that is important was overlooked by the older investigators, so may we anticipate still greater results from still more searching and minute investigations in the future."* Comparatively few physicians, be it observed, are sufficiently trained in pathological anatomy of the brain to make trustworthy observations of this organ—a defect in medical education, which is a serious hindrance to wholesome progress in the psychology of this subject.

* *Mental Pathology*, etc., p. 409.

When we remember that the above words of Professor Griesinger were penned in 1845, it must materially increase our admiration of the rare sagacity and scientific spirit which animated the soul of this great German physician. His prediction has very naturally come true. Pathologists of to-day are able to descend into anatomical minutiæ to a degree which would have amazed a Pinel, or an Esquirol, or even the Griesinger of fifty years ago. But even now, with their finer aids and facilities of observation and their vastly increased knowledge and appreciation of morbid molecular changes, he would write himself down an idiot who would claim that the last degree of molecular analysis had been reached, and that there were no greater depths in that direction to which the microscope could conduct the psychiatrist. Nevertheless, a position has been reached in the department of the morbid anatomy of the brain, when the pathologist may confidently assert, without fear of contradiction, that mania and abnormal changes in the brain-substance or its vessels are constant concomitants of each other. Analogy, long since, forced this conviction upon the medical mind, but the proofs have come with painful slowness. The scientific spirit, however, can wait for verification. Like the Eternal, whose child it is, science is in no hurry with its processes, and can afford to advance slowly and with infinite patience.

Schroeder van der Kolk, after an experience in the study of pathological anatomy of more than thirty years, says that he does "not remember dur-

ing the last twenty-five years the dissection of an insane person who did not afford a satisfactory explanation of the phenomena during life." "On many occasions," he continues, "I was able accurately to foretell what we should find." * Maudsley's experience in the same direction, however, evidently does not justify him in making so strong an assertion. He writes: "The cases of chronic insanity in which all anatomical lesions are wanting, are rare. The longer the insanity has lasted the more evident they usually are." Nothing could be more natural; but between a lesion or a perceptible morbid change in the brain-tissues, and a morbid molecular change in them, there is an infinity of distance; and the inference is perfectly logical that, at the outset, or in the small beginnings of the disease, before even the symptoms of it were sufficiently prominent to excite apprehension, much less alarm, the local morbid changes might be absolutely unrecognizable, even were the brain of such a person open to inspection. By means of the ophthalmoscope, however, many minute pathological changes in the nerve-tissue in such cases are recognizable now during life, which were before impossible.

The condition of the brain and the tissues of the encephalon in acute insanity affords the most conclusive testimony in support of the physical character of psychical disease. Even in cases that do not disclose some defect, lesion, or malformation of

* *Minute Structure and Function of the Medulla Oblongata*, p. 231. Cited from Maudsley's *Physiology and Pathology of the Mind*, p. 392.

the membranes of the encephalon, or of the ganglionic bodies associated with the structure of the hemispheres, there is constantly to be found hyperæmia of the pia mater and arachnoid; sometimes inflammation of both these membranes; discoloration and extravasation of blood in the cortical layer, or grey substance, and frequently softening. The white substance of the brain discloses, also, the same hyperæmic tendency in the manifest increase of the puncta vasculosa. Dr. Maudsley has reported a case of acute insanity of which dissection showed some of the above characteristics. The arachnoid, however, "was slightly clouded, like glass gently breathed upon, and streaked with a delicate milky opacity along the lines of the vessels, while it was bulged at the sulci by a clear, serous fluid beneath." * The author regrets that the examination of this case could not have been carried further by a competent microscopist. Had it been, he feels certain that the cortical grey, the ideational substance, would have exhibited the same, or a similar hyperæmic condition.

There is something peculiarly significant in the fact that mania, whether acute or chronic, is so generally associated with disease of the serous envelope of the brain, involving at the same time, of course, the pia mater, which lies in close contact with the cerebral cortex, or dome of thought, and supplies its circulation. The anatomical relation of the parts shows conclusively that the effect of any deviation on the part of the arachnoid or pia mater,

* *Physiology and Pathology of Mind*, p. 347.

especially the latter, from its normal condition, would be at once reflected upon the cortical substance and naturally interfere with the harmony of its function; thus deranging the normal procession of ideas, and inducing morbid fancies or wild delirium, so characteristic of insanity. The strange fancies or actual delirium which are such familiar concomitants of simple or inflammatory fever find, in the intimate sympathy of the pia mater and the cortex, or grey substance of the brain, an easy and satisfactory explanation. The same fact also explains, in a manner equally conclusive, why insanity may exist, in its early stages at least, and leave no visible trace of its presence in the cerebral substance; its functions only being impaired by disease of its contiguous membranes, the adjacent ganglia, or the connecting commissures. Indeed, the sympathy between the cortical substance and the pia mater is so close, its dependence on it for nutrition and molecular life even, we may say, is so great, that its function could not but be greatly influenced, or entirely controlled by the condition of that vascular envelope. And Griesinger declares, on the strength of the facts brought to light by autopsies of the insane, "*that the most important and most constant changes in the insane consist in diffuse diseases of the external layers of the cortical substance—that is, of the surfaces of the brain and of the membranes covering them.*" *

In the encephalon of the chronically insane, however, as well as the incurably wicked and depraved, every form of malformation is found to which living

* *Mental Pathology*, etc., p. 414. The Italics are his.

tissue is liable. Osseous tumors of the cranial bones; stalactites and exostoses of their plates and internal surfaces; hypertrophy and induration of all the membranes of the brain; atrophy, induration, anæmia, extravasation of blood and softening of the medullary substance; cysts, tubercles, cancer growths and cystercercuses within its substance; fatty degeneration, etc.; atrophy, thickening, distortion, malformation, or entire absence of the corpus collosum and other commissury bodies; the pineal and other glands; the various ganglia of the brain; atheroma, rigidity, calcification, and aneurisms of the arteries, both large and small, even of the miscroscopic arteries; thrombosis and contraction of the sinuses; fibrous deposits; incomplete, distorted, and unsymmetrical development of the hemispheres and their convolutions and sulci, etc., are a few of the pathological degenerations found within the cranium of those unfortunate creatures who have died insane. The list, partial and incomplete though it be, is more significant than entertaining.

Let no one suppose, moreover—among the unsophisticated in medical subjects we mean—that lesions, or malformations in insanity are confined to the head. He who is insane in the head, is insane all over him—deranged and distorted in every part. We do not now refer to, nor include, those cases of acute mental derangement which so frequently supervene upon adequate exciting causes—causes which would rack and cause to totter in its dome the reason of the strongest; but to those cases of

idiopathic, constitutional insanity, of which the asylums are full to-day. Their bodies as well as their brains are abnormal in every part; and herein is the important lesson of our essay. Even those cases of monomania—cases of mere eccentricity of character, have generally some deflection from the ideal type, some degree of asymmetry in the contour of the physique,—it may be of small importance by itself; it may consist, for example, of stubbed fingers; distorted or ingrowing nails; growing together of the toes; turning in of the toes in walking; a noticeable difference in the halves of the body, of the head, limbs, cast in the eyes, etc. These peculiarities are common to eccentric people the world over; and we have seldom failed to discover something of the kind in them when we have had an opportunity to look for it; and, in general, the graver the form and degree of the eccentricity, the graver will be the physical defect. The pronounced insane, and the depraved people who fill our jails and penitentiaries, and the hosts of other people in society, who, if they had their just deserts, in the superficial estimation of their judges, would be in jail—if enough jails there were to hold them—are physically disordered and malformed more or less. There is a want of symmetry in their bodies everywhere; a decided divergence from the ideal type of the human form, quite noticeable. The muscles are frequently unequally developed: the skin is wanting its normal sensibility and texture; is often coarse-grained, with copious development of moles and hair; wanting in delicacy of sensation,

and is not unfrequently anæsthetic. The special senses are likewise affected—sometimes preternaturally acute, or dull; sometimes entirely wanting. The structure of the eyes is imperfect, and the eyes often possess unequal sight; one being myopic, the other, presbyopic. Various other peculiarities, as strabismus, squinting, opacity, cataract, etc., may be frequently observed. Not unfrequently, also, may be found deformed joints, deformed nails; ears disproportionately small, or disproportionately large; congenital varices; nævuses; harelip; cycosic excrescences; wens and warts; a superfluity of fingers; unequal length of the limbs; unequal size of the hands and feet. Sometimes all these members are abnormally small; sometimes they are abnormally large. The physiognomy, too, is inharmonious and graceless. Then, there is often to be observed a want of the full power of muscular coördination, which destroys the harmony of gait and manner. The walk may be shuffling and awkward; wanting in grace, in ease, and in elasticity. The hands are unwieldy and acquire dexterity or cunning with difficulty. There is stuttering, or confused speech; an uneasy, restless eye; an unsteady, faltering, purposeless movement; or a quiet, dull, apathetic manner.

With these external marks of bodily asymmetry are generally found internal defects in keeping with them. Some of the organs are preternaturally large; others preternaturally small. Defects of the sexual system are very common. Displacement and other abnormal changes of the womb, ovaries and the

testes, with unequal development of them, or the absence of one of them, are not unfrequently met with in the eccentric or insane. Then, there are atheroma and aneurism of the arteries; malformation of the heart and its valves; tumors in the stomach and intestines, worms, chronic diarrhœa, or inveterate constipation, etc. But the most common and constant defect of the viscera in insanity is tubercle in the lungs. All observers agree, so far as we know, that tubercular consumption of the lungs is the most common corporeal disease with which the insane are afflicted, and, indeed, the most common cause from which they die. We have seen many cases in private practice that we believe were saved from insanity only to die of consumption of the lungs. Were it possible for these physical anomalies to subsist in the absence of corresponding psychical anomalies, one might conclude, with some show of reason, that the mind or soul of man was independent of, and sustained an existence apart from, its environment or visibility. The truth is the twin anomalies are never dissociated except under exceptional circumstances, such as are susceptible of an explanation entirely consistent with their essential unity.

It has been urged in contradiction of this doctrine of the dependence of the mind on the physique, that in many and well-attested instances, individuals of infirm bodies have possessed extraordinary mentality. And such instances would seem, at first view, to be inconsistent with the physiology of the subject. But the inconsistency is more apparent than

real. Instead of being an injury, it not unfrequently happens that a so-called physical disease is of signal benefit to one's mental powers. Novalis was a stupid lad until after a course of fever; and his poetic genius was never so brilliant as when he was dying of consumption of the lungs. Theodore Parker's experience was not altogether dissimilar; and the mind of the celebrated Pascal was relieved rather than burdened by bodily infirmity. Similar examples might be adduced in great numbers; and they go far to show the kindly intent of nature in the institution of "disease" and in guiding its direction—producing a local affection to relieve the economy of a constitutional disorder. In cases, for example, of a tubercular diathesis, consumption of the lungs may afford its victims a happy escape from a worse fate,—that of mania. Disease is never an unmitigated evil be it observed; given the requisite conditions, it is, indeed, never an evil. It is always a sequence, rational and legitimate in its institution, and of course, wisely conservative in its results. In organisms tainted with constitutional defects or disorders, it is a manifest advantage to have the sequences visited upon parts other than the brain.

It is hardly necessary to our argument that we should, in this place, reverse our procedure and show the morbid influence of a deranged cerebro-spinal system on the lower corporeal functions. Everybody knows the withering influence of grief, how it dries the very bones; the effect of fear, how it bristles the hair, reduces the temperature, and

paralyzes the sympathetic centres of the heart; of anxiety, how it arrests the secretions and wrinkles the skin; of remorse, how it consumes the body as with a never-ending fire; of disappointment and thwarting of the affections, how life's warm currents are checked in their course, and the natural tendency of life's energies reversed by it. All nature within one, when hope has fled, engages in a slow persistent suicide. Joy reverses this process, bringing back the heart's action and restoring the respiration; while jealousy, it is said, produces spasms in the heart and chest, and anger gives rise to the premonitory symptoms of apoplexy. "Witness," says Feuchtersleben,* "the storm in the veins of the angry one; his inflamed countenance, his gasping breath, his beating pulse, wild expressions and all the premonitory symptoms of apoplexy!" Fear blanches the cheek, and despondency slows the respiration and the pulse beat. Shame causes the cheeks to blush and the eyes to drop. The influence of love, on the other hand, is like an exhilarating elixir, vivifying all the sensibilities. It is capable of restoring life to the infirm and renewing the youth of the aged. Whatever be the circumstances under which we live, joy or sorrow, adversity or prosperity, success or disappointment; whatever be the condition of our body, healthy or diseased, deformed or symmetrical, sane or insane, no labored argument is required to satisfy the reason of men of learning to-day, that the human body, like the universe, of which it is the epitome and evolution, is under the

* *Dietetics of the Soul*, p. 106.

laws of mind, and in form and substance mind's supreme incarnation and visible embodiment.

In conclusion, we observe that if additional evidence of the mutual dependence of mind and matter be required, it is afforded by the phenomena of growth, maturity and decline. The mental and physical develop in perfect accord from childhood to old age. The immature mind is invariably associated with an immature body: mental defects with defects of the physique; and if, by reason of disease or accident the development of the cerebrum is arrested, the powers of mind are arrested also, as shown in the case of anencephalic idiots, several instances of which have been cited in the course of these pages. Not only in brainless creatures, but also in creatures whose brains are conditioned well or ill, does one observe a corresponding degree of mentality. The feeble-brained lad is proverbially stupid; the "brainy" lad is quick-witted; and if he be precocious, his physique affords abundant evidence of the fact, as well as reason for it.

In maturity the physique has reached the zenith of its development and the mind attained the height of its powers. From this point decline of both begin. And while it is true that, for obvious reasons, all the faculties and powers of the mind do not equally lose their vigor with the decline of the physique, it is true that the decadence of mentality *as a whole*, keeps even pace with that of the body. The advance of old age brings signs of decrepitude. The special senses become dull; the eyes lose their ordinary keenness of sight; the hearing is less acute;

the sense of smell is impaired; the taste is blunted; the sense of touch fails. With these obvious signs of decay comes the impairment of the functions of digestion and assimilation. The form bends as if under too heavy a weight; the stature shortens; the complexion loses its freshness; the skin becomes too large for its contents, and hangs in wrinkles here and there, showing the outline of the muscles beneath. These part with their tone, and the form which they support loses its suppleness. While these processes are advancing, the mental faculties show evident indications of sharing in the general decline. The memory is less retentive, the brain losing its sensibility to impressions. The individual requires more sleep and lighter tasks. The animal instincts decline and die. The reasoning powers, perhaps the last to feel the approach of life's great enemy, death, possess less force and grasp, if they do not fade out completely before the final dissolution. Should disease invade the organism and involve the brain or its meninges, the light of the mind goes out prematurely. The unhappy victim of brain-softening loses while he yet lives, moves, and has a kind of being, that which was his chiefest and most distinguishing glory—intelligence.

While these things are self-evident, their significance, strange to say, is very generally misapprehended. It is customary to transpose the relation of cause and sequence in respect of the relation of mind and body, and to place that second, which, in the order of nature, is first. If brain be regarded as a mere instrument for the manifestation of mind,

played on by mind as one plays on a musical instrument, as we are too often told, and does not of itself coördinate such manifestations, we may reasonably pause to wonder why the flaccid brain of an infant should not furnish a more flexible "instrument" for the mind to play on than the cumbersome brain of the sturdy adult!

In view of all the facts, interpreted by the light which science reflects upon them, the hypothesis which supposes that the brain is but an instrument for the mind to make itself manifest, we fear, will have to go where so many other similar hypotheses have gone. If infancy ever exhibited the mental strength of maturity; if a babe in the arms were ever capable of calculating an eclipse, or making an induction from observed data; if the genius of a man of average intelligence were ever discovered full-orbed in the cradle, then might we logically conclude, either that a miracle had been wrought, or that mind was distinct from, and independent of, states of the physique.

PART IV.

THE UNITY OF THE NATURAL AND SUPERNATURAL.

"Nature means the sum of all phenomena, together with the causes which produce them; including not only all that happens, but all that is capable of happening; the unused capabilities of causes being as much a part of the idea of nature as those which take effect."—*John Stuart Mill.*

PART IV.

THE UNITY OF THE NATURAL AND SUPERNATURAL.

BARRING causes, material and fundamental, the providence which shapes our ends is no mysterious power behind the planet, or back of the universe, but a living palpable presence in the heart and brain of the body politic. The proposition, at first thought, may strike many minds as an assumption of ignorance, or a conception bred by impiety and announced with insufficient deliberation. The proposition itself is certainly at variance with the average thought and at war with the belief most pleasing and satisfactory to the average heart. The popular intelligence, or unintelligence, reposes in the belief that the direction of human events is under the immediate care and responsibility of a personal Deity. According to this view, providence sustains the same relation to God that sequence does to cause, or that this pen does to the will of the writer; it is an influence which proceeds from the Supreme Will.

While this view is undoubtedly correct in respect of the Cosmos, it will not bear a moment's examina-

tion in the full light of modern science in respect of Government and Society. Nor is it consistent with the highest conception of religious thought. A Supreme Will there undoubtedly is, but He has delegated the management of a few things to finite wills. In the light of science the conception of an intelligent agency, a personal Deity personally directing the course of mundane events, seems like a subterfuge of ignorance to account for phenomena too obscure to be grappled with by feeble or infirm apprehensions. It is the usual resort of emotive minds, of minds imbued with piety and sensibility, but, nevertheless, minds too feeble or too indolent to think on the nature and course of society with sufficient definiteness and continuity to penetrate the secret of its forces, to comprehend its processes, or to discover its methods. To minds thus constituted, all strange and extraordinary phenomena; unforeseen and unexpected events; sudden and striking change of circumstance; happy extrication from pressing and embarrassing difficulties; and innumerable instances of frequently recurring and often surprising, events in the world of matter and sense and in the life of nations and of individuals, are instinctively and with joyful gratitude, or submissive melancholy, according as the instance be well or ill, referred to the direct agency of a divine, or devilish, interposition! The extent to which this belief and practice prevails, in the minor and more trivial details of personal experience, makes it a subject for serious criticism. The God of the universe is degraded in this view to the low level of a body-

servant, and made to do service which a high-spirited lackey would decline to do. Thus a reverend reviewer of Professor Tyndall's Belfast address, writes: "To know a fly, even in its eyes, its feet, its wings, etc., is something; but it is as nothing beside the fact that God made it, feeds it, has his eye continually on it, as he made us, feeds us, and watches us with an eye that never sleeps." * And in his first discourse in New York, after his return from Rome, Cardinal McCloskey, the eminent apostle of Him who advised against seeking worldly honor and preferment, said that "it was his first duty to give fervent thanks to the merciful Father who had watched over him, shielded him from accident, and conducted him in all his journey in safety, and permitted his return in the fulness of health," etc. The same idea takes other and equally ludicrous forms: "Living or dying I am the Lord's," says one; "God is my hope"; "God is my shield and support"; "Christ was on the train with me all the way, and I knew He would keep it on the track and bring me through safely," observed an enthusiastic Christian to the writer on arriving at the end of a long and tedious journey; "God sent you to me," said a D. D. in trouble, to a newly-made friend, etc.

The language of these well-meaning, but misguided people, would lead one to suppose that the God of the universe was their most intimate confidant and trusted attendant; that he watched over their little souls at night, inspired their dreams, and

* James Lillie, D. D., *Christian Quarterly*, April, 1875, p. 203.

told them when to rise in the morning; that in all their petty troubles, little griefs and big iniquities, He dissuaded, cheered and advised them—talking to them in private and sustaining them in public; comforting them in sorrow and affliction; raising up friends on special occasions, to defend them against aspersion and to shield them against the just as well as the unjust consequences of folly, etc.*

These forms of expression, conformable to this belief, have become a serious abuse of the genius of religion. They are relics of an ignorant, superstitious age and have become meaningless, or hypocritical, in an age advanced by scientific thought. Many a little erring sinner, or saint, in Christendom, who happens, by a good or ill fortune, to possess an extravagant emotional nature, trails the great Divinity—

"Through ways that are dark and tricks that are vain;"

* "His providence extends over all the works of his hands, and he takes cognizance of all our thoughts, words and deeds; our eating and our drinking, our downsitting and our uprising, our sleeping and our watching, our speaking and our silence; He gives us seed time and harvest, the early and the latter rains, the heat of summer and the snows of winter; He makes the corn to grow in our valleys, and crowns our hills with flocks and herds; He gives victory or defeat to our armies, setteth up and pulleth down kings, rears the infant colony into a mighty people, and overwhelms the empire and makes the populous city desolate; He is the sovereign arbiter of nations and individuals, in temporals as in spirituals. His law is as universal as His providence, and is the sovereign law in all things for all in heaven, on the earth, and under the earth." —Review of the Chevalier Artaud de Montor's *Histoire des Souverains Pontifes. Brownson's Rev.*, Jan., 1853.

the lay sinner on 'change or in the counting-house; the clerical sinner in the pulpit or on the platform; the wily pettifogger coaching his witness; the adroit editor prostituting his trust; the canting hypocrite in possession of other men's consciences; the artful demagogue and eloquent *débauché*—all alike claim to be on terms of personal intimacy with the most High, and to be the recipients from Him of personal admonition and direction in their public and private life, to the injury of religion and the dignity of Divinity.

"We are in an age," says J. Stuart Mill, "of weak beliefs, and in which such belief as men have is much more determined by their wish to believe than by any mental appreciation of evidence."† And Emerson observes that "men bear beliefs as trees bear apples." Religious devotees indulge an extravagant fancy concerning events and phenomena, so extraordinary *in fact*, that there is no need of resorting to fancy. They seem to make credulity a virtue, and the greatest credulity the greatest virtue. The more improbable the phenomenon the firmer it is believed by them. They would sooner believe, if it were so related, that Jonah swallowed the whale, than that he was swallowed by it. Rational explanations of remarkable events are accepted whenever they *must* be; the irrational, whenever they *can* be. In their view, a personal Providence divided the Red Sea that Moses and the Jews might elude the pursuit of Pharaoh and his hosts; the same hand, likewise, reunited the

† *Three Essays on Religion*, p. 70.

Red Sea and closed in the waters upon their pursuers. So, too, the Supreme Being directed—nay, superintended—the construction of the historic Ark which preserved the species against the ravaging flood; subjected Jonah to that unique and most remarkable experience in the stomach of a whale; rained fire and brimstone from heaven upon Sodom and Gomorrah; bereaved Lot and "preserved" his wife; directed the wars and rapine of the Jews; visited upon that peculiar people, alternate famine and plague, liberty and captivity; and finally scattered them to the four winds of heaven, to become unjust objects of reproach among Christian nations.

The hand of Providence is seen by the credulous alike in the rise and fall of nations and peoples, in the fluctuation of gold and the stock market, and in the personal fortunes and misfortunes of individuals. God is even believed to have held conversations with men, personally directing their fortunes and inspiring their thoughts. It was a common expression among the ancient Jews, "that God put it in his heart;" "that the angel of the Lord warned him in a dream," etc. The Lord was the alleged author of all their good thoughts, wise sayings, and many of their bad ones. They were devoid of a rational philosophy of mental processes, and, unhappily for religion, could not, therefore, perceive how bright thoughts and strong impulses, good desires and evil temptations, etc., could have any other origin than in an influx from the most High, or His august antithesis, the most Low.

Since the times of which we have just spoken, the average thought on this subject has, happily, undergone some little modification. One hears it said that "the day of miracles is past," and, for a curious reason, that God has no further need of them. Be that as it may, there is a wide-spread belief that a personal Providence does not meddle in human affairs to the extent, or in the precise mode that was formerly the case; law, another figment of the imagination, having taken His place in the apprehension of the more intelligent and logical minded.* A partial exception to this statement must be allowed, however, on behalf of the Roman Catholics. A volume entitled *Le Diable: sa nature et son Histoire*, was some time since published in France, and found its way to the sacred *Bibliothèque Catholique de l'Hopital Militaire de Toulouse*, a library especially selected to give ignorant inmates of that institution healthy instruction in Christian theology. The library has been blessed and approved by his Holiness, the late venerable

* Nothing can be more misleading than the popular conception of a *natural law*. The generality of writers on scientific subjects insist that the phenomena of nature are determined by Law. We cannot but agree with Mr. Lewes that the reverse of this is true; that instead of phenomena being determined by law, phenomena are themselves the exponent of law. He says that the idea of phenomena being determined by law, "must be replaced by the more accurate conception of the *law being determined by the phenomena*. What we call laws of nature are not objective existences, but subjective abstractions—formulæ in which the multifarious phenomena are stripped of their variety and reduced to unity."—*Problems of Life and Mind*. Vol. I., p. 273.

Pio Nino, and every volume in it may be said to be officinal. The little book referred to reaffirms, with all its horrid details, the repulsive doctrine of two spiritual chieftains in the universe, God and Satan, each surrounded by an innumerable host of assistants and supporters, and engaged in ceaseless warfare against each other. God, and his hosts of ministering angels and assistants, are the promoters of good and the agents of the wonderful miracles which attest their beneficence. Satan, and his army of lesser, but equally active and more designing imps, prey upon the bodies and souls of human beings, and incite in both the well-known tendency to evil and error. The credulous author of the little volume referred to professes to have the strongest assurance, to use the language of M. Sarcey, in an interesting correspondence republished by the *Courrier des Etats-Unis*,* that these devils "peuvent opérer sur la matière des prodiges qui dépassent la comprehension de la nature humaine, qu'il leur est permis, par example, de transformer, d'altérer, de transporter des objets matériels, comme firent les magiciens d'Egypte, qui changèrent aisément leur baguette en serpent, les eaux du Nil en sang, et les gouttes d'eau de pluie en grenouilles." These are a few of the small miracles which the devil and his followers are able to perform: "Mais ils ne peuvent jamais venir à bout de produire, comme Moïse, une nuée de moucherons. C'était là que Dieu les attendait, et que le diable s'avoua vaincu. Il pousse jusqu' à la grenouille il s'arrête devant le moucheron."

* June 25, 1875.

The author of the volume then proceeds to vindicate the doctrine, long since abandoned by the common-sense of mankind, of demoniacal possession, as evidenced in the strange phenomena of epilepsy, mania, mediumship, etc., affirming that Catholic theologians have positive proofs of its validity: "Tout homme chez qui le dérangement de l'esprit se produit par des manifestations extérieures, telles que convulsions, cris, délire, injures, écume a là bouche, est la proie du démon qui s'est logé en son corps. Il a besoin d'un prêtre, non du médicin. Il n'y a d'autre remède à lui administrer que l'eau bénite et l'exorcisme!" Thus making a clean issue with the physiologist and physician and giving sanction to imposture medicine!

We would be glad to believe that this form of superstition were confined to the lower classes and to the Roman Church. But, unhappily, it is not so. There are many intelligent Protestants, as well as Catholics, who still regard Providence as the responsible author, if not of small events, at least of memorable epochs and great calamities, such as railroad collisions, and shipwrecks; droughts, earthquakes and tornadoes; fire devastations, fever epidemics and famine. The rise and fall of stocks and the national credit; the changing course of rain, wind and malady; sudden death; narrow escapes; extraordinary recovery from sickness; retributive justice; the remorseful conscience and the penitent heart, etc., are still believed, by no small number of people, in the very heart of Christendom, to be more or less under the control and instigation of a personal

Creator. In fact, what the gods were to the Pagan Greeks in ancient times, a personal Divinity is to a vast majority of the Anglo-Saxons of to-day—especially such as make any pretension to religion. They cannot but imagine invisible hands behind the curtain of miraculous displays. They almost "see God in the clouds and hear him in the wind."

Moreover, the idea of a General Superintendent of mundane affairs was so strongly impressed on the flaccid brains of our pious ancestors, that it is by no means an easy task to remove it, even when the mind is willing that the impression may be removed. So it is that the *rudiment* of the idea, as Mr. Darwin would say, still continues to show itself in the conduct and in the forms of speech of those who have long since abandoned the conception of special Providences as a barbarism to be resolutely expunged from the language. The ancient expression, "*Deo volente*," for example, is still in use by the more credulous, and also by many of a more skeptical turn, who regard it a mere figure of speech. "God put it in your heart to do that," is a very common expression in complimenting a noble act. "God bless you" is so common as to be almost meaningless; and "Good-bye," has lost its significance entirely. The custom, too, of calling upon God to bless the repast, instead of expressing thanks for it, before partaking of it, is a barbarism of the same type. The same barbarism crops out in other and worse forms: "I was providentially rescued from the burning wreck," wrote a happy survivor of a melancholy conflagration on the high

seas; while he might have written, in the same breath, and with equal consistency, that scores of others, of equal goodness or badness to himself, were providentially doomed to watery graves! In the wreck of the ill-fated *Schiller*, Providence is made to play the same ignominious rôle in behalf of a few miserable male survivors; while a whole company of innocent and helpless women and children, with one exception, were left both by God and man to suffer a hapless fate in the merciless waves! There are those of fair intelligence and sound judgment on all other subjects, who see—or think they do—the hand of Providence in the contradictory and inconsistent conduct of individuals; unexpected revulsion and transformation of character and purpose; the sudden and involuntary turn of political events; happy endings of critical conjunctures; the rise and progress of the most opposite systems of religion and philosophy, of government and political economy; and who find consolation in the belief of an over-ruling Providence, alike for corrupt dynasties and venal legislators; stupid rulers and crafty politicians; eminent philanthropists and equally eminent hypocrites; great men and small men; rare geniuses and hopeless idiots. And we confess, that in an age, when so many anomalies of this character exist, it is no little consolation to believe that they have a prescribed place in the body politic. The Teacher, however, declared that though offenses must be, yet, "woe be to him through whom they come."

Then, there are optimists who look with com-

placency upon injustice and wrong-doing as if they were a necessary part of the divine economy, and were, therefore, to be tolerated, instead of being rebuked and corrected. Such a state of mind relieves one of responsibility in life's affairs, and turns everything over to the direction of Providence. But such a proposition is most absurd. It cannot be that the generality of mankind are so steeped in sin and bereft of sense, so lost to the beckoning glory of a nobler life as to need the evils of this world as a corrective, *per se*. The unequalled prayer of the divine Jesus, "Lead us not into temptation," would lose half its significance if this were true. It would be transposing the natural relation of things —putting the sequence before the cause. The ills of life are in good part rather the consequence of ignorance, injustice and wrong-doing, which it is the clear duty of all to seek to overcome and remove. If they react on the conscience of the individual, bring him down on his guilty knees, and compel him to think more seriously on himself and nature, as they sometimes do, let us thank divine wisdom for the fact, but, at the same time, preserve the integrity of our logical intuitions. Suffering and affliction exist no more for the benefit of piety than does an army for the horde of vultures that hang on its rear. Such philosophy of human ills mistakes signs and symptoms of maladies for their reality and substance; the effects of diseases for their causes; the incidents of a play for the plot. It is absurd to suppose that either pain or pleasure is the real end and object of life, both being, rather, incidents of the

normal and abnormal state. M. De Tocqueville has felicitously expressed the truth of this subject in two sentences: "La vie n'est pas un plaisir ni une douleur; mais une affaire grave dont nous somme chargés, et qu'il faut conduire et terminer à notre honneur." If the converse of this truth were true—if suffering were really essential to the nurture of piety, the more evil and sorrow and disease and pain and wretchedness, the better. One should rather labor to add to all these alarming miseries of life, that man may be deterred from evil courses and made good and happy. Instead of racking their brains and wasting their sympathies in diffusing light and dispelling shadow, philanthropists should put out the one and increase the other. It would be wiser to follow the example of the average doctor of medicine and divinity, and be content to make delusive cures with the poisonous agencies of the pharmacopœia, and Sunday discourses on the Jewish patriarchs, or the mysteries of the Apocalypse! The evils which good men grieve over and bad men rejoice not in, must then be accounted as dispensations of Providence, sent for a wise purpose, and to be thankfully received and rejoicingly endured; and Providence, Himself, regarded as logically responsible for the existence of much in human history that is universally regretted by the common mind; and for the character of men whose memory good people will justly execrate so long as the record of their deeds endures. Surely, the world will not soon forget such "providences" as Saul and Herod; Nero and Catiline; Richelieu and Henry VIII.; or those

of a Judas Iscariot, a Jeffrey, a Wilkes Booth, or a Guiteau. In the existence of characters like these, the invisible agency of Deity may be traced in the same manner that it may be traced in that of a plague, a labor strike, a chemical explosion, or an earthquake—and in no other way. The causes of both classes of phenomena may all be due to Providence, in one sense, but unless we are mistaken, it is a providence for which Newton's "God of the Universe" is by no means directly responsible. It is a providence with a small p—a providence which may be traced to the conditions under which the phenomena occur. Such a providence is manifest in all the affairs of men; and one could no more escape from its influence than an effect could exist without its cause.

For such reasons as these are we led to abandon the doctrine of special providences, inasmuch as we would respect the dignity of the omniscient Author of the universe, and do no violence to the intelligence of intelligent men. The causes of phenomena, whether physical or moral, must be sought for in the phenomena themselves, and traced step by step through every combination of causes, until each connecting link in the chain of causation is found, and the circuit in which the phenomena occur, completed. The supernatural disappears in the process as naturally as darkness before the advance of light.*

* "Whatsoever in nature," observes J. Stuart Mill, "gives indication of beneficent design, proves this beneficence to be armed only with limited power; and the duty of man is to cooperate with the beneficent powers, not by imitating, but by

Let us illustrate our meaning: Witness the growth of vegetation, or, to be more definite, a solitary tree—the sturdy oak, for an example. Here is a marvel which fails to excite our wonder only because we are so familiar with it. The giant oak, with its shaggy trunk, bifurcating into a thousand forks; its strong branches irradiating from the centre to an immense circumference; its countless leaves extending their surfaces to the air as if anxious to catch every passing sunbeam—all quivering under the stimulus of solar impulses, all instinct with resistless purpose, is a phenomenon of grand proportions.

Whence comes this huge structure? Given the acorn, endowed with a principle of differentiation, and the process of oak-building can be traced with a certainty equalling that of ship-building. We know all the elements required, and can furnish them; we know all the conditions needed, and can name them. The fabric of the oak is built up from carbon chiefly derived from the air. Carbonic acid is supplied to the atmosphere from animal respiration, and the disintegration (oxydation) of vegetable and animal forms. The leaf absorbs this acid, decomposes it, retains its carbon, and returns to the atmosphere its oxygen. Silently this work goes on, day after day, and year after year, from the first sprouting of the germ, in the warm, moist soil, until the

perpetually striving to amend the course of nature, and bringing that part of it, over which he can exercise control, more nearly into conformity with a high standard of justice and goodness."—*Three Essays on Religion*, p. 65.

vast proportions of this queen of the forest are unfolded.

But this is not the whole of the problem. We have indicated only the source of the chief element made use of in tissue-forming. From whence comes the force which carries on the mystic process and perfects the marvellous work? This power is derived from the transmuting agency of the green leaf. The chlorophyl of the leaf correlates solar energy sufficient for the purposes of growth. Or, to take a step back of the leaf, the original force is the solar ray, the force of all forces, the power of all powers. The leaf is simply an instrument—a chemical laboratory on a small scale—worked by the actinic force of the yellow ray in the wonderful sunbeam, by which the required elements are transposed and elaborated, and finally deposited in the tissues of the oak. The whole process is as natural as the growth of a coral reef, or the course of wind and rain. It loses its supernatural character only when it is understood.

The subject may be still further elucidated by a brief examination of the ordinary causes of a steam boiler explosion. Let us suppose that in the fullness of time and the progress of civilization, this same huge oak, which has withstood the blasts of a hundred winters and absorbed the carbonic acid and ammonia of a thousand lives, and returned to the atmosphere an equal volume of pure, life-giving oxygen, becomes itself a victim of civilization; is cut down, prepared for fuel, consumed in a furnace, and its vast treasures of transmuted energy (sun-

light) utilized in propelling the steam-engine of some railroad car, or passenger steamship. The furnace, be it remembered, is simply an instrument for correlating the energy of the oak, the original sunlight, (in this instance), into heat. This it does by chemically reuniting the oxygen of the atmosphere to the carbon of the oaken fuel, thus re-forming carbonic acid and liberating an enormous quantity of heat. This heat is absorbed by the water of the steam boiler, which it converts into steam, whose force of expansion is exactly equal to the amount of heat absorbed. The steam-engine, it may be remarked, is simply an ingenious machine for transmuting or correlating heat into motion, and presents to the uninformed, or unfamiliar spectator, when in operation, a display unequalled in marvellousness by any that the works of nature afford. Now, let us suppose that the boiler of this engine was originally defective, or has become weakened with use, or its safety-valve impaired; or its engineer has permitted the heat-force to accumulate unduly for the strength of its material. An explosion is the inevitable consequence. The heat-force, the accumulation of a century, perhaps, which nature had expended in the form of light in elaborating the firm fibre of the oak, now used as fuel, has blown a huge boiler into shreds and with it destroyed hundreds of human lives and thousands of valuable property! One, with the love of the marvellous, may properly wonder *why* this needless wreck of valuable property, and *why* this murderous waste of human life; but the *how* need be no more mystery to him than the

bursting of a water-main or the explosion of a powder mine. It yields to rational interrogation with the ease of the simplest problem in physics, or mathematics, and at the same time exonerates Providence from the baseless accusation of playing malevolent pranks in human affairs, so far, at least, as boiler explosions are concerned.

Then, there are phenomena on a lower plane of nature, in physics proper, such as chemical affinity, catalysis, crystallization, and that presented by the varied aspects of the heavens, meteorological—all natural—which are truly of a marvellous character, but not of a supernatural origin. The inorganic elements manifest the sentiments of affection and repugnance; some of them seem to be congenial "spirits," or rather atoms, mingling together in cordial unity and definite proportion, and forming fixed and permanent associations. This phenomena is known to the chemist as chemical affinity. Others of the elements mutually dislike and repel each other, and manifest a disposition to separate and when brought together through the agency of others form, at best, weak and unstable combinations. Like certain friendships, which rest upon feeble attachments, their connections are easily dissolved; as soon as the strain of adverse forces is brought to bear upon them, they are broken and disjointed. Why oxygen should "love" hydrogen better than carbon, or chloride of sodium better than potassium, is a marvel which neither science nor revelation can make clear. Nor is it any business of ours, since it will never yield its secret to observation and induction.

The phenomena of crystallization, however, are neither less wonderful nor more. The inorganic elements in passing from a fluid, or fused, to a solid state, are known to assume a certain regularity of geometrical structure. The forms thus assumed are, with few exceptions, invariable and characteristic, so that each chemical element, or compound, may generally be known by the peculiarity of its crystal. Thus, chloride of sodium invariably crystallizes in little dices, or cubes; sulphate of soda, in oblique, rhombic prisms; water, in a variety of beautiful star-shape, or hexagonal forms, etc. Nothing can exceed the precision with which the atoms, as if moved with invisible hands, place themselves, surface to surface, angle to angle, in their proper place. No chisel of artist, or skill of trained hands, could equal it. The designs are as perfect as the process is inimitable, showing an invisible architect—a form of *mind*, not law—at work, among the rocks of the lowest and crudest formations, not inferior in art to anything which the genius of man has yet discovered or disclosed!

"But," it may be observed, "these are phenomena which proceed from legitimate antecedents. They are altogether regular and natural, occurring within the appointed order and through the uniform operation of natural processes and forces—are, in other words, governed by 'Law.' It is not pretended that they are marvellous, or belong to the high domain of the miraculous or supernatural, though they may be very curious and interesting, and certainly are very beautiful. It is to phenom-

ena which can be predicated upon no antecedents; phenomena which arise independent of conditions, spontaneous and impulsive as volition, inevitable and imperative as the solar impulse, in which the invisible agency of the Almighty is traced and His pleasure or displeasure, manifested. The miraculous is characterized in those feats of creation which transcend nature and natural sense: in those supernatural exhibitions of energy and design which are manifested in spite of, and against the natural order of nature, natural forces, and natural laws."

We beg leave, in reply to this supposititious argument, to question the existence of phenomena which do not rest upon legitimate antecedents. "The days of miracles are past," we rejoin, not because God has no further use for them, or because the phenomena miscalled miracles do not exist, but because the advance of knowledge has put man on the track of the causes of those strange occurrences which, at an earlier and more credulous age, were generally regarded and received as miracles. The miraculous occurrences have not ceased to exist, only the miraculous element has been eliminated from them. So far from the days of miracles being past, we aver that, barring the improbable and fictitious, there never was a period since the dawn of history, when the very events which have been ascribed to the miraculous were so numerous as they are to-day. But they are yielding to the touch of the scientific spirit. The miraculous in them is disappearing before investigation as darkness before light, or as winter's frost before the advance of summer's heat. That

which is passing in this matter is *the belief in miracles*, and surely Heaven has no further need of that.

"Fifty years ago," says Matthew Arnold, "a plain Englishman would have had no difficulty in thinking that the Cana miracle was true, and the other miracles were fables. He is now irresistibly led to class all these occurrences in one category, as unsubstantial tales of marvel. Scales seem to drop from his eyes in regard to miracles, and if he is to hold fast his Christianity, it must no longer depend upon them." These so-called miracles fulfilled in their day an important purpose, which they would be powerless to do to-day. There is, surely, nothing in the recorded doings of Christ, or of the apostles, or of the Christian fathers and ascetics of the Middle Ages, more wonderful than the psychological phenomena which are daily occurring in our midst. All the marvellous works which the divine Jesus did in Galilee and elsewhere, to the astonishment of his followers, are being done to-day by divers believers, and non-believers throughout Christendom. Jesus distinctly disclaimed the exercise of exceptional powers when he did those things that surprised people so much, and frankly told his followers, by way of quieting their surprise, that they should do greater works than those he had done in their presence. And his prophecy has been verified. The gift of healing, which signalized the marvellous and sublime career of Jesus, is now exercised by thousands. We concede that with certain limitations, the deaf are made to hear; the blind to see; the lame to walk; the paralytic to recover the use of his

functions; and often, by the agency—by no means supernatural—of prayer alone. Epilepsy is charmed out of people, and madness dispelled as if by magic. The apparent dead are revived, and that, too, after having been buried many days. The ignorant speak in unknown tongues; write in foreign languages; read sealed letters and closed books; perceive the thoughts we think and the emotions we feel, etc., and all by the exercise of powers which, in the absence of a knowledge of the laws and powers of mind, could not but be attributed to the occult agency of departed spirits, or to that of a personal and supernatural power. Such powers as these are now known to belong to the bodily organization; and until the fact was definitely settled we think mankind were justified in attributing phenomena so strange and extraordinary to supernatural, if not to a Divine agency.

In respect of healing miracles, the medical profession has been cognizant of them from time immemorial; its literature, from the age of Hippocrates down to the present era, abounds with well-accredited instances of them, occurring both in the personal experience and observation of physicians of high repute. Since the days of miracles passed away, it has been customary with them to attribute cures of that character to the influence of the imagination and the power of expectancy on the part of the patient, operating upon his own bodily functions. But what is Imagination? and what, Expectancy? Latterly, however, while not discrediting the curative agency of those powers, they are

found insufficient to cover all the admitted facts involved, as for example, the instantaneous cure of young children and infants, who manifestly are not influenced by Faith or Hope in the royal, or priestly touch, or in prayers. In such cases the curative influence is exercised by one mind over the corporal and mental functions of another, as claimed by Mesmer, and his followers of later times.

In a treatise on "Glandoles," by one Browne, surgeon to King Charles II., occurs an account of a cure which illustrates several phases of the subject under consideration. We quote:

"A non-conformist's child, in Norfolk, being troubled with scrofulous swellings, the late deceased Sir Thomas Browne, of Norwich, being consulted about the same, his Majesty being then in Breda, or Bourges, he advised the parents of the child to have it carried over to the King, (his own method being used ineffectually); the father seemed very strange at this advice, and utterly denied it, saying the touch of the King was of no greater efficacy than any other man's. The mother of the child, adhering to the doctor's advice, studied all imaginable means to have it over, and at last prevailed with her husband to let it change the air for three weeks or a month; this being granted the friends of the child that went with it, unknown to the father, carried it to Breda, where the King touched it, and she returned home perfectly healed. The child being come to its father's house, and he, finding so great an alteration, inquires how his daughter arrived at this health. The friends thereof assured him that, if he would not be angry with them, they would relate the whole truth; they, having his promise for the same, as-

sured him they had the child to be touched at Breda; whereby they apparently let him see the great benefit the child received thereby. Hereupon the father became so annoyed that he threw off his non-conformity, and expressed his thanks in this manner: 'Farewell to all dissenters and to all non-conformists; if God can put so much virtue in the King's hands as to heal my child, I'll serve that God and that King as long as I live, with all thankfulness.' *

The father's reason for returning to the orthodox faith shows that he should never have left it.

Father Matthew, of more recent date, possessed the healing power to a remarkable degree. The career of this remarkable man among the sick and infirm has few parallels in ancient or modern times. Many a poor cripple hobbled to him on crutches, and leaving the crutches at his door, rejoicingly walked away whole and sound. Cures are said to be effected, still, at his grave, upon those who go there with sufficient faith.

Still more remarkable was the career of that religious enthusiast, Prince Hohenlohe, Archbishop and Grand Provost of Grosswardein, Hungary, and Abbot of St. Michaels at Gaborjan. Following the example of his divine Master and predecessor, Jesus of Nazareth, he appealed constantly to the faith of the unfortunate cripples of both mind and body that flocked to him in such multitudes, and by prayers and sacred relics, restored them to health. The ex-king of Bavaria, Prince Louis, was cured by

* Cited from *Influence of the Mind upon the Body*, p. 359. D. H. Tuke, M. D., M. R. C. P.

this prince-priest of a deafness which he had had from his infancy—and he was of the decided opinion that the days of miracles were *not* past. "There are still miracles," he writes to a noble friend; and in describing what he saw of the wonderful cures effected by Prince Hohenlohe, on a certain day, he said: "The deaf heard, the blind saw, the lame freely walked, not by the aid of art, but by a few short prayers, and by the invocation of the name of Jesus" etc. This occasion was in 1822.*

Dr. Tuke of England has collected a large number of instances of this character from his personal experience, the personal experience of his colleagues, and the writings of physicians and others, to show the influence of the mind upon the body. But in most of these cases it will be remarked, that the influence has been a double one, viz.: *First*, the influence of the mind of the operator upon his patient; and *Second*, the influence of the patient's own mind through the powers of Faith and Expectancy upon himself. And the most skeptical physician must admit that the case must, indeed, be a difficult one that could resist the curative agency of both those influences acting conjointly.

To those who are accustomed to view mind as the governor and director of vital phenomena—or indeed of non-vital phenomena, if such there be—these remarkable cures will seem by no means miraculous, or outside the broad domain of natural, though they be human, forces. Nor will they seem

* *Vide* citations of like character in Dr. Tuke's treatise, already referred to.

exceptional to the physician of large experience and accurate observation, except in degree; for there is no physician who brings to his high calling natural, as well as cultivated qualities, who does not sometimes, if not always, unconsciously to himself, and sometimes, if not always, equally unconsciously to his patient, young or old, influence recovery by the kindly action of his mind upon him. The influence of one mind, strongly purposed, upon the feebler organism of another, is a great factor in the curative art. While its *methodus medendi* is unknown, the fact is unquestionable. We have no doubt that medicaments often get fictitious credit for the cures that follow their administration; the *doctor* being, in fact, frequently more efficacious than his drug, though he knows it not, or if he does, his modesty is of too delicate a quality to permit him to make the admission! As the blind believer in the efficacy of prayer takes no credit to himself for the cures he effects thereby, but loyally ascribes the credit to a supernatural agency, so the physician attributes whatever good he does his patient to the credit of the drug, or other means which he employs, and ignores his own personal and psychological agency in the matter, or that of his patient.

We think, then, that it is a matter of profound regret, that the devout mind should attempt to satisfy his love of the marvellous, by leaving the plane of ordinary observation and experience—an exhaustless plane for the discovery of divine energy and the display of creative phenomena, which must forever satisfy the ken of his genius—and entering

the vague region of the delusive, exhaust itself in the contemplation of the impracticable and fictitious. Where all is divine exceptions are invidious; where all is natural the supernatural is superfluous. Alas, that man's love of the so-called supernatural should transcend his love of the natural, and find gratification in believing that flies may be created from mist atoms; frogs from rain-drops; serpents from wooden rods; woman from the fifth rib of an unmanly man; or the majestic earth from nothing at all! Alas, that he could have been brought, by any species of moral magic or pious legerdemain, to believe it more consonant with religion, or consistent with divine wisdom, to carry forward the sublime works of nature on a plan devised by Egyptian magicians, than by that which human sagacity has discovered, and which appeals for verification to the rational instincts of every individual! Alas, that man should ever have been led to indulge a greater fondness for the miraculous and inventive, than for truth and discovery, and that, too, for reasons quite obvious. The love of the former leads to superstition—it dwarfs and enervates both heart and mind. The love of the latter is an inspiration—perpetual, ennobling and enlarging the whole man.

Quæ supra nos nihil ad nos. Indeed, nothing can awaken in a soul alive to the realities of the sensible world, a profounder sense of the divine Majesty than the contemplation of the natural. He who doubts this truth should study the heavens with the means and acquirements of the modern observatory; and if the revelations thus received, do not

bring him down from the narrow pedestal of the dogmatic writers, let him study living protoplasm under the illuminating point of a modern microscope. Here, truly, will he find a world *infra*-natural which far transcends the ordinary conception of the world *supra*-natural, and henceforth be moved to worship the Father in a broader temple than any which human hands can build. The Rev. James Martineau indulges not in poesy but in the verities of scientific fact, when he observes: "Everything has turned out grander in the reality than in the preconception. The heavens that open to the eye of a Herschel; the geologic time whose measures direct the calculations of a Lyell; the chain of living existences whose links are in the mind of a Hooker, Agassiz, or Darwin, infinitely transcend the universe of Psalmists' song and Apocalyptic vision."*

Let us suspend our belief in the supernatural and hold on to our faith in the *supra*-sensible. There can be no warfare between revealed verities and discovered verities. "Truth herself," says Plutarch, "is a thing so delectable and lovely as if our very life and being were for the sake of knowing."† As truth is stranger than fiction and infinitely more lovable, so the natural is stranger than the so-called miraculous, and infinitely more enduring. A belief in the miraculous was an infirmity, perhaps a necessity, of a former age, to be cured, we hope, in this; and we cannot share the regret which many

* *Essays Philosophical and Theological*, Vol. I., p. 125.

† *Morals*, Vol. II., p. 171.

good men indulge in, because of a decline of the belief in it. The true believer is he who puts into his creed the elements of both heart and head—not the blind worshipper. To him, the idea of the miraculous is distasteful, repugnant, notwithstanding, as M. Renan observes, it was the power of the great founder of Christianity,—"la puissance du grand Fondateur." And it is our conviction that the cause of truth and religion would be greatly promoted by an abandonment of that which was once the delusive foundation of faith in Christ. That wise prediction of M. Renan is being fulfilled daily before our eyes, *viz.*: That "if ever the worship of Jesus grows feeble in the heart of humanity, it will be because of the acts which made men believe in him," *i. e.* the miracles which he is said to have performed.*

While the scientist, therefore, can trace, with surprising particularity the successive links in the chain of causes of physical phenomena in the formation and transformation of matter, from the last effect to the immediate cause—not the Deity, but the solar beam—and prove thereby the inutility,

* "La difference des temps a changé en quelque chose de très blessant pour nous ce qui fit la puissance du grand Fondateur, et, si jamais le culte de Jésus s'affaiblit dans l'humanité ce sera justement à cause des actes qui ont fait croire en lui. La critique n'éprouve devant ces sortes de phénomènes historiques aucun embarras. Un thaumaturge de nos jours, à moins d'une naiveté extreme, comme cela a cu lieu chez certaines stigmatisées de l'Allemagne, est odieux, car il fait des miracles sans y croire; il est un charlatan."—Renan's *Vie de Jésus.* 13me Edition, p. 267-8. Paris, 1867.

not to say, absurdity, of calling in the aid of a supernatural, or an occult, personal agency to explain them, he confessedly cannot so easily, or to an equal degree of precision and satisfaction, accomplish this great feat of reason and observation, in explaining the more complex phenomena of animal life—and especially that form of animal life embodied in man. Enough is known of the causes of the phenomena of human life, however, to justify him in attempting to "account for moral as for natural things"; and if he does, sometimes, under the impetus of this faith, rudely enter places commonly held sacred in his eager search for causes, he does not always do it with a faithless spirit or an irreverent purpose. The love of truth impels his course, and demands the sacrifice often of beliefs which he himself would hold sacred; and if he prove an iconoclast, the result is often no less an affliction to himself than it is to the most devout believer.

The causes which influence human life and shape its destiny are of exceeding complexity. The closest scrutiny into the causes of any given development of a human being is only equal to the discovery of certain controlling causes, while the minor and modifying ones, remain unknown and possibly past finding out. It is due to the infinite variety of the modifying influences, or causes, that the devout believer in special providences and the miraculous feels so confident of his belief, and so secure against successful polemical attack; and that he is able often to defend his belief against the assault of the most astute observer. Like a bird in a thicket, for every position

from which he is driven there are a thousand which he can assume. Nevertheless, that the chain of causation is complete, within the circle of which every thought is generated and every act developed in the life of man from the cradle to the grave, leaving no room for special interpositions, there can be no rational doubt. Modern science stands unequivocally committed to this strong position by the very term of its method of research—Induction. And on this position it can afford to stand, always master of the situation. Every discovery which it gives to mankind is a vindication of its power and influence.

Finally: foremost among the wonders which the world of the miraculous displays stands man himself, in the two phases of his existence—health and disease. The psychological phenomena which he exhibits in certain abnormal states are wrongly regarded by the average mind as more remarkable, more closely bordering upon the miraculous, than those which are characteristic of the normal state. A sound man is only an object of envy, or admiration; an unsound one of pity, wonder, and often of awe. Examine the leading characteristics of a man whose condition is in all respects normal: such a one represents the perfection of his species. His form is a model of symmetry, proportion and strength; the limbs are straight and round; the shoulders broad and the chest deep, with a full abdominal development, denoting a strong physique and vast physical resources. The step is elastic and the movement easy and graceful. The complexion

is clear and fresh ; the mood bright and cheerful, indicating good digestion and sound lungs. His mental characteristics are equally noticeable. The apprehensions are acute and clear, and keenly alive to the just relation of things. The head is broad, high, and possesses depth antero-posteriorly. The features are regular and clear-cut; the eyes full, strong and expressive ; the lips firm and the chin strong—all pointing to strength and nobility of character. The intellectual faculties are well developed, well trained, active and in readiness for emergencies. His moral faculties are by no means inferior to the intellectual. But he does not dream dreams, or hear strange whisperings, or possess second sight, or have visions. The keen sense of justice and fair dealing ; the kind heart and the charitable judgment ; the forgiving spirit and the forbearing manner ; the love of truth and right, and the hatred of falsehood and oppression ; the simplicity and courtesy of demeanor ; the modesty and humility of bearing ; the dislike of sham and pretension ; and that which is still more marked in him, perhaps, the moral courage in serious dangers and trials, and the strong faith and trust in God and man, under all circumstances, alike in joy or sorrow, success or defeat, all go to make up one's ideal of the godlike, and to command the confidence and admiration of mankind. All the functions of a man sound, proceed with regularity and in admirable harmony. Looking at him from the physical, or objective, side of nature he presents a living machine of marvellous perfection for the transmutation of physical energy into the godlike

powers of the human mind, into those subjective psychological manifestations which we have come to recognize, as thought and feeling, passion and will, sympathy and understanding, etc. It is wonderful, and still more wonderful is it, that all these marvellous powers of the human mind can be traced back, step by step, to the single nucleated cell in the ovum, which contains the germ of Being,—yea, further back still, to the microscopic granule of living amœba, and the power that wrought upon it, that *breathed* upon it, so to speak, to the solar ray! This fact is a living *natural* miracle of such amazing proportion, that none but the astute philosopher is credulous enough to believe it!

On the other hand, an unsound man is a phenomenon of a less comely character, presenting phases the antithesis, in many respects, of the character we have just outlined. He is sadly out of harmony with himself and his environment. Some ill wind blew upon him in the bud, and he barely escaped blasting. Some morbid condition was bred in him in the beginning, and he bears it to the end. An evil genius is in possession of his faculties, and he is borne down as by an evil current, like drift-wood in a flood, to an irresistible fate, and an inevitable, ill-advised destiny.

The evidence of this conclusion may be seen in every lineament of his body, and expression of his mind. The physique is feeble and disproportioned; digestion and assimilation defective; the muscular system is atrophied or flaccid, and the form lacks symmetry, and the movement, grace. Or, perhaps,

instead of this abnormality, the lungs are tuberculated, or the liver cirrhosied. The functions are ill-performed; the complexion is sallow, and the form skinny. The head is large, and altogether out of proportion to the rest of his body; and the *tout ensemble* of the physical appearance resembles, not unlikely, an old-fashioned theologian of the fire-brimstone-endless-torment type.

But, possibly, the unsound, ill-developed man presents a phase of abnormality the converse of this brief outline. The outward and visible development is perfect, perhaps, and the tone and condition of the lower bodily organs and functions unexceptionable. This may all be the case, if we except the brain and nervous system, and yet the mental characteristics be most eccentric—the morbid element, unfortunately, showing itself in a more vital direction—upon the functions of some of the higher and more important nerve-centres, the citadels of thought and feeling. His conduct is not always trustworthy. He is eccentric in manner, and controlled by moods. His mind is sometimes confused, his memory defective and his judgment embarrassed. Not unfrequently, epileptic seizures occur, or there may be attacks of ecstasy, and trance, in which strange sights, as angels, devils, Jehovah and dead men, are seen; unearthly voices heard, visions beheld, and "revelations" from God and spirits received, and other phenomena of a so-called miraculous character exhibited, to the astonishment of a wonder-loving world. Perhaps, in place of this extreme manifestation of nervous disease, there

will be the less serious, but equally striking, psychological phenomena of dream-visions, unconscious speaking, versification, prophecy, mind-reading, healing the sick, and other exhibitions of clairvoyants, and mesmerism. These symptoms of ill health are very commonly exhibited in many forms of nervous disorder; and it is by no means uncommon to find them, in women, associated with disease of some of the lower bodily organs, as the ovaries and mammæ; and, in men, with disorder of the nervous system, induced, also, by some disease of the generative organs, causing sympathetic disturbance. But let the cause, or causes be what they may, all manifestations of this character are believed to be predicated on some nervous abnormality or neurosis. They are, in truth, symptoms of grave nervous affections, and the victims of them should be relegated to the care of a medical adviser, instead of being held up as objects of human homage, and treated as oracles for the enunciation of divine truth.

The connection which subsists between certain forms of nervous disease and the phenomena of ecstasy and religious enthusiasm is intimate enough to cast grave suspicion on the value of communications reflected through such a medium. If skepticism have any legitimate office to fill in testing the credibility of evidence; if it have any place in the affairs of human life it is surely of the greatest service here in weighing and verifying the evidence in support of reputed truths revealed through disordered sources. The physicist exercises the most scrupulous caution, in his search for verities, against every

possible source of error, lest his conclusions be vitiated and his experiment dishonored. If his instruments be defective the result is valueless. If the crucible be faulty, or the test tube dirty, the experiment is wanting in its essential element, exactitude —scientific precision. The most studious care and circumspection of the conditions of observation are manifestly indispensable to a demonstration in any department of science. This desire for precision and certitude is carried into every department of temporal affairs in which truth and honor have any part or place, or reputation and character any value. Examine the commercial records of business men; the various departments of government and finance; the accounts of bankers and brokers; of merchants and manufacturers. They are all, or ought to be, exact and fair, and nothing left to guessing. Observe the administration of justice in our courts of law; the care and precision exercised in weighing and sifting evidence; the competency of proof; the wonderful nicety and discrimination exercised on the part of judge and advocate in deciding between competency and incompetency, and guarding against prejudices in making up a verdict, in deciding between fact and fancy, truth and error, justice and injustice. Such is the wisdom of man in the conduct of business. But when he comes to the department of religious investigations, a field of observation the highest and most important of all, and which calls for the highest degree of circumspection and impartiality in searching for verities, this admirable method of research is dropped, and looseness

and credulity take the place of careful study and exact observation. Wild vagaries are substituted for well-digested data; fancies take the place of facts; and abnormal phenomena are confounded with, if not actually substituted for, those of a normal or rational character. It is amazing with what looseness of method men test the grounds of religious belief, and with what imbecile credulity they accept as true the most astounding and impossible allegations, facts involving the most weighty interests of the individual and the race, both temporal and spiritual, for time and eternity! They accept the credibility of witnesses and the relevancy of proofs without evidence, more often in spite of evidence; and decide between truth and error concerning questions of more dignity and importance than were ever adjudicated in any court of law, and that, too, on evidence that would excite derision in the meanest police court in Turkey or Siam. The consequence is the amazing spectacle of a world flooded, literally flooded, with incompatible creeds and warring sects; contradictory theologies and adverse religions; and every sect professing love for truth and hatred for error, and charity and love toward their fellow-men; but all animated with the dogmatic intolerant spirit, and only restrained from indulging open hostility against one another, and belying their professions of charity and good-will by the strong arm of the civil authority! The discrepancy of religious doctrines and the widespread disorders engendered thereby, are to us strong evidence of their abnormal origin.

If intuitions are to be accepted as a reliable source of truth, it is important that they should be intuitions of those possessing sound minds and bodies. A healthy moral philosophy cannot spring from insane conditions. As well expect grapes from thorns, figs from thistles, or pure water from impure fountains.

Shall we then discard the teachings of Mohammed, because he had epilepsy? Of Gôtama, because he starved himself into ecstasy? Of Paul, because he had visions and claimed to receive visits from departed spirits? Of Swedenborg, because he had a morbid appetite and was cataleptic? Of Luther, because he had delusions and was haunted by the devil? Shall we reject the moral precepts of the world's great leaders of religious thought, the ascetics of the Middle Ages, and, later, of a Pascal, a Calvin, the Wesleys, a Bunyan, a Parker, etc., because they had infirmities peculiar to genius? Not at all. But, while it would manifestly be unwise unceremoniously to repudiate wisdom, let the source of it be what it may, it would be equally unwise and gratuitous to accept it, without a full examination, not only of the physical condition of a religious teacher, but also of the nature of the proofs of such a one, testing every fact, tenet, or principle revealed or presented by him, by rules of evidence which satisfy the cultivated sense. The highest intellectual duty man owes to himself or to his race, is the separation of revealed truth from revealed error. Heaven knows they have been, and still are, exceedingly mixed in the religious teach-

ings of mankind; and that they require the foresight of the cultivated understanding to precipitate the one from the other.

The mystery of the Cosmos is something to be discovered, rather than revealed; indeed, its revelation would be inconsistent with the beneficent order of mental progress—a hindrance, instead of a help, to the struggling *ego* within us. And when that mystery, so profound and impenetrable now, shall open to our expanded vision, dissolve before our animated sight, we are constrained to believe that one's respect for the normal sight will be infinitely enhanced, and to declare our conviction that that which it will discover will be infinitely more marvellous than those remarkable things which have been revealed to the world through the disordered fancies of exceptional genius. Nevertheless, we cannot but sympathize with the views of M. Renan on this subject:—"Though medicine have names to express these great observations of human nature; though it maintain that genius be a disease of the brain; though it see in certain moral sensibility the commencement of phthisis; though it class enthusiasm among nervous symptoms; it is of little consequence. *Sick* and *well* are relative terms. Who would not rather be sick like Pascal than well like the multitude?" *

* "Gardons-nous donc de mutiler l'histoire pour satisfaire nos mesquines susceptibilitiés. Qui de nous, pygmées que nous sommes, pourrait faire ce que fesait l'extravagant François d'Assise, l'hystérique Sainte-Thérèse? Que la médecine ait des noms pour exprimer ces grands écarts de la nature hu-

maine, qu'elle soutienne que le génie est une maladie du cerveau, qu'elle voit dans une certaine délicatesse morale un commencement d'étisie; qu'elle classe l'enthousiasme et l'amour parmi les accidents nerveux, peu importe. Les mots de sain et de malade sont tout relatifs. Qui n'aimerait mieux être malade comme Pascal que bien portant comme le vulgaire? Les idées étroites qui se sont répandues de nos jours sur la folie égarent de la façon la plus grave nos jugements historiques dans les questions de ce genre. Un état où l'on dit des choses dont on n'a pas conscience, où la pensée se produit sans que la volonte l'appelle et la regle, expose maintenant un homme à être séquestré comme halluciné. Autrefois, cela s'appelait prophétie et inspiration. Les plus belles choses du monde sont sorties d'acces de fièvre: toute création éminente entraîne une rupture d'équilibre; l'enfantement est par loi de nature un état violent."—*Vie de Jésus.* 13^me^ Edition, pp. 468-9.

PART V.

THE UNITY OF DIVINE AND HUMAN AGENCY.

" Les corps vivants sont machines a l'infini."—*Leibnitz.*

" The culminating point of man's intellectual interpretation of nature may be said to be his recognition of the unity of the power of which her phenomena are the diversified manifestations. Toward this point all scientific inquiry tends. For the convertibility of the physical forces, the correlation of these with the vital, and the intimacy of that *nexus* between mental and bodily activity, which, explain it as we may, cannot be denied, all lead upward toward one and the same conclusion,—the source of all power in mind."—Carpenter's *Mental Physiology*, p. 696.

" Les sensations physiques de plaisir et de douleur qui accompagnent les impressions de l'âme pendant les manifestations des sentiments et des passions, devraient donc avoir pour siége primitif un organe nerveux outre que la cerveau : c'est principalement aux nerfs du grand sympathique qu'appartient cette fonction ; et, comme tous les phénomènes auxquels préside ce système sont indépendants de la volenté les phénomènes de l'émotion le sont aussi."—Despine's *Psychologie Naturelle*, Tome I., p. 339.

PART V.

THE UNITY OF DIVINE AND HUMAN AGENCY.

ONE of the most pleasing and satisfactory beliefs which mankind have indulged, from time immemorial, is that of divine inspiration, or the infusion of ideas into a finite mind by the infinite Mind. No conception of the primitive intellect has shown a hardier or more persistent vitality. It has stemmed every wave of doubt, or form of skepticism of the past, and even now, the belief in the possibility of inspiration, from some source outside of ourselves, either finite or Infinite, divine or devilish, is held in some form or other by people of every grade of intellectuality. The advance of the scientific spirit and method of research has turned the pure scientist away from such a conception of the origin of thought and feeling, but the rest of mankind with rare unanimity, hold on to it—an idea which took shape in the philosophy of the monks and schoolmen—and decline to receive a philosophy of mental processes which traces their good thoughts and bad to sources within their own brains and bodies.

Perhaps both are right—the schoolmen and the scientists. While the views of the latter on this subject are susceptible of demonstration, it would be gratuitous to deny the possibility of the views of the former having some foundation in fact. Indeed, science admonishes us by its profound explorations and discoveries to affirm rather than to deny the possibility of anything. The scientist makes no pretense of having penetrated all the mysteries of the Cosmos. The most that he can affirm with certainty is the legitimacy of all phenomena of whatever character, physical or psychical. In matters relating to the psychical, there is good reason in following, with certain precautions, the lead of intuitive minds. They are entitled to speak with authority, in some degree, of things which are beyond the capacity of the common plodder, and which lie outside the domain of pure science. If the propriety of such a concession be admitted, the theologians and schoolmen have some justification in holding on to their views of the intimacy of gods and men, and the controlling, inspiring influence of powers superior to, and outside of, themselves.

The best minds of the cultivated Greeks, it may be observed, did not doubt the familiar interposition of the gods in their affairs, inspiring their thoughts and directing their fates. No less a character than Socrates believed in spiritual intercourse between the living and the dead, and rejected the idea of absolute death. Moreover, he claimed, and his friends for him, to have been attended from infancy by a Dæmon, or guardian spirit, which guided and

instructed his judgment and often protected his person from danger. Plutarch says that this Dæmon usually went before him, as it were, shedding "a light upon hidden and obscure matters, and such as could not be discovered by unassisted human understanding; of such things the Dæmon often discoursed with him, presiding over and by divine instinct, directing his intentions." * Plutarch himself was no doubter on this subject, at least so far as communication with deceased friends is concerned. He wrote: "Should not we then—when reason shows us that a real converse with persons departed this life may be had, and that he who loves may both feel and be with the party that affects and loves him—relinquish these men that cannot as much as cast off all their airy shades and outside barks for which they are all their time in lamentation and fresh affliction." † And again, this felicitous author declared, that "very amiable things must those be that come to us from the gods." ‡

Some of these grand men of the past appear to have lived in close communion with the subjective, or so-called spiritual world. "For those gods," says Hermogenes, "who know all things, and can do all things, are so friendly and loving to me, that because they take care of me I never escape them, either by night or by day, wherever I go, or whatever I am about. And because they know beforehand what issue anything will have, they signify it by sending

* *Morals*, Vol. II., p. 338.
† *Ibid.*, p. 200.
‡ *Ibid.*, p. 194.

angels, voices, dreams and presages." This passage was quoted by Plutarch,* as an offset to the philosophy of Epicurus, which had so many adherents among the Greeks of his day; and it is quite in conformity with the conceits of many people of modern times, who fancy themselves watched over and cared for by spiritual existences, if not by God himself.

While the belief in direct intercourse between objective and subjective existences—the material and the so-called spiritual world—has been strongly entertained by many advanced minds from the earliest recorded time, it has been most conspicuous among poets and mystics—minds untrained in the methods of science, or the habit of critical investigations. The belief was also conspicuous among the Jews, and has likewise been held, though in a less degree, by the primitive tribes of all people, and for the reason, as we believe, that thought and feeling were mysteries to them, and involved problems in psychology and physiology beyond their understanding and with which the untutored mind, generally, is incompetent to deal. The belief in inspiration and supernatural agencies was naturally enough a prominent dogma in the shadowy times of human development, when man referred every emotion which he felt, or idea which he thought, or desire which he willed, to an agency from some mystical source outside of himself. "There is a spirit in man," wrote Job, "and the inspiration of the Almighty giveth them understanding." † Thus

* *Morals*, Vol. II., p. 194.

† *Job*, xxxii., 8.

it was that a man could not feel an impulse, or have a desire, but some one suggested it to him; that some one being supposed to be Jehovah himself, or some evil genii without form or substance which inhabited the solar spaces, or moved unseen among the abodes of men. And when the belief in the divine source of ideas and emotions began to wane, and the individual was accredited with an inherent power to think and feel and will, it was only necessary that he should go to sleep and dream, as did the good Peter and the bad Balaam of old, to know what God had to say to, or desired of, him. Thus the dream became at one time of greater significance and authority in human affairs than the clear, sober judgment and waking thought. It was not strange, then, that those extraordinary manifestations of mentality, the phenomena of clairvoyance, trance, mind-reading and other psychological phenomena which modern physiologists have associated with "hypnotism," "unconscious cerebration," "muscular sense," etc., should have been imputed to divine inspiration; nor that those of improvisation and ecstasy, and the sudden and often surprising exhibition of the imaginative and intellectual powers, by those known to be unlettered, should have been referred to supernatural causes. How else could they arise? Were they not produced without will on their part? Were they not unprovoked and spontaneous? The reflective are as replete with answers as with interrogatories. They are bound to find answers of some sort to every query that arises within themselves. And in the absence of a correct

knowledge of vital processes—of the functions of brain and nerve, the influence of mind over matter and matter over mind—they are left to the expediency of accepting that explanation of mental phenomena afforded by consciousness, which is far more likely to lead them wrong than right. Consciousness, unaided, can give no clue to the mysteries of its own processes. That knowledge must be sought in a study of the processes of organic life, and especially of those of the nervous function. The study of biology, physiology and pathology is alone equal to the solution of the mystery in which thought and feeling are enshrouded. The facts derived from such sources support the conclusion and give color of plausibility to the hypothesis that thinking is the exercise of the nervous functions, and that all those extraordinary perverted exhibitions of mentality of which the world has been so full, arise in the exercise of the same functions in an abnormal, excited or perverted condition, and are not necessarily due to an influx from the Most High, as many devout people suppose. They are, therefore, for the most part, regarded and treated by the physiologist as evidence of nervous disorder, if not of actual, mental disease. So strong has this conviction become in the mind of most intelligent people that he who should now come forward with the claim of being divinely inspired would be regarded as a fraud—pious perhaps, but still a fraud—to be carefully watched or turned over to the police magistrate or commission in lunacy. And, accordingly, the people who formerly supposed

themselves to be on terms of intimate personal relation and intercourse with the Deity have grown less pretentious than formerly, and are now content to confine their belief to the holding of personal communication with the spirits of departed men and women.

The doctrine of divine inspiration, as a common every-day experience in the lives of men and women has been therefore, abandoned by many of the very class with which it originated and which for ages strenuously maintained it. To charge a sermon now-a-days to inspiration is rightly held by its author to be a poor compliment to his genius, if not a downright insult to his manhood. Perhaps it is from the pride or egotism he has of the sufficiency of his own mental powers, or that he is more sensible of the labor it has cost him to write it, that the clergyman arrogates to himself whatever credit the quality of his discourse possesses. But let the motive be what it may, he is generally unwilling that another shall have the éclat which is rightly due to his own mental exertion and cerebral processes and to those of no one else.

This change of religious conviction, on the part of religious devotees, concerning a most vital tenet in the religions of all people, is a most interesting phenomenon in the progress of belief. Formerly, the religious speaker was *moved* to speak. His first act upon entering the sanctuary was to kneel in prayer for divine guidance. He *waited* for the divine inunction or suggestion—for the quickening of the Holy Spirit—and when he had finished,

returned thanks for the truths which had been spoken through him. So, too, the clerical student had a divine *call* to the sacred ministry, and dared not to disobey it. He went into the pulpit without other authority, and sometimes without even ordination; having often no previous preparation; knowing not what he should say—or rather, what God should say *through* him. He was a passive *exponent* of God's truth; the holy Word being expounded *through* him and not *by* him. Under these circumstances his words were laden with supernatural grace —were pregnant with supernatural meaning. They may have been crude and illogical. Examined in the light of science and philosophy, they may have been found simple and childish; nay, they may have failed under the plain criticism of common-sense. But if the wisdom in them was not apparent by such gross tests as these, it was because it was not on the surface, but lay concealed below the surface. Wisdom must have been in them, though clothed in simple garb and homely ungrammatical phrase, for God himself had spoken, and the believing heart, assisted by divine grace, should be able to find it in them, and know and feel all its force and significance. The humble listener sat, therefore, before the "inspired" teacher, with bated breath and enwrapped attention, that he might lose no word or hidden meaning of the sacred expostulation. God himself spoke through his humble servant and revealed divine truth to the contrite heart, and the unrepentant, or incredulous sinner. To question the correctness of a proposition pro-

pounded at the sacred desk from the lips of God's ministering servant, was sacrilege; to raise a doubt, impiety; to dispute a conclusion, heresy; to deny premise, infidelity—a degree of impiety so rank, carrying with it such heavy pains and penalties, both temporal and spiritual, that few were likely to risk their imposition by a frank avowal of incredulity, whatever may have been their private conviction, or want of conviction. Under these administrations the doubter usually maintained a respectful silence, for reasons of courtesy if not of prudence. It is so much easier to glide along with a hypocritical assent to a doctrine, absurd and pretentious though it be, than stem the current of public opinion, and bring down upon one's self, singly, the terrors of social ostracism, if not of actual bodily pains, which, in the name of God, the pious believer was in the habit of inflicting upon the pious or impious unbeliever.*

Such was the state, and such were the conse-

* "La conception fort ancienne d'hommes," says M. Despine, "suscités par la divinité pour diriger sous sa propre inspiration les autres hommes provient, chez ceux qui l'ont appliquée à eux-mêmes, du sentiment du merveilleux, de l'orgueil, d'une ambition généreuse ou égoiste. Chez certains d'entre eux, l'idée de s'attribuer une mission divine s'est fortifiée par des hallucinations en rapport avec cette idée. La croyance en des hommes providentiels a été inspirée à ceux qui l'ont appliquée aux autres, par le sentiment du merveilleux, par l'admiration, par la crainte, et par l'espérance. Cette croyance n'est rien moins que flatteuse pour les hommes illustres qui en sont l'objet, car elle leur fait jouer le rôle d'automates." *Psychologie Naturelle*, Tome I., pp. 419, 420.

quences, of religious opinion respecting divine inspiration, within living memory. If it nurtured hypocrisy, it also hatched schisms and through the intellectual warfare of the schismatics, fallacies are exploded, errors refuted, and the truth is vindicated or made known.

But is there no such fact in human experience as divine inspiration? Is not the soul ever illuminated by reflections from eternal Light? Does not man, poor, plodding man, ever communicate with his Maker, or his Maker with him? Only through Christ and the Virgin, say Christians; only through the prophet Mohammed, say Islamites; through none of these sacred personages, in a special sense, say scientists. These channels of intercommunication between man and his Maker are, in our view, altogether too narrow for human needs. The real communion between the creature and the Creator is far more intimate and immediate than is indicated in the terms of those sects. Man lives and moves in his Creator and his Creator in him, in very deed. This is no mere figure of speech—no metaphor—no untranslatable poem, devoid of fact and reality, but a real practical truth, to be taken in its broadest and most literal signification. Man is truly a part of the Creator. His life is a finite expression of the Infinite Life. He and his Father are one. The creed of the creature may be never so narrow and orthodox, or broad and heterodox; he may never have felt the formal "warning of the Spirit," or a "change of heart"; the existence of Christ and the Apostles, the Gospels, or the catechisms he may

never have heard of; and yet, he is the conscious recipient of countless blessings from the Father every moment. He lives immersed as in an ocean of influences, not less divine because physical and human, which he inspires with every breath and inhales through every pore. He feels the pulse of the infinite Heart in every beat of his own, and is warmed, cheered, enlivened and sustained by all these mysterious influences of mind and matter which constitute the infinity of being around him.

In his healthy, normal condition, man rests confidingly on the divine Providences. His trust in the divine paternity is instinctive and spontaneous. He does not stop to reason on the relations of the divine and human. There is a feeling within assuring him that He who creates can sustain; He who provides for the beginning can provide for the end. And this feeling is, we repeat, instinctive with every creature, in a normal condition, be his religious faith what it may. In an abnormal condition of body and mind, or through false teaching this feeling of serenity may be perverted or destroyed altogether, and in place of rest and trust in the eternal laws, the creature may feel as if he were cut off from the Creator and the universe; the heavens become as brass, and darkness is substituted for light; despair for hope; melancholy takes the place of the exuberant life and light of the normal, healthy state, though his creed be of the most orthodox and his moral conduct the most unexceptionable. In either case, the moral state is governed by physiological conditions, states of the

brain and nervous system—especially of the grand sympathetic system—which admit of being defined as normal, or abnormal, healthy or diseased, and not at all by belief or unbelief in any creed or form of religious faith whatsoever. The truth is, there is no merit in either belief or unbelief; nor is either a matter of choice or will and subject to individual caprice; and when theologians talk of a soul cut off from God, or living without hope in the world because, forsooth, he disputes the terms of the catechism, or denies the authenticity of the Gospels, they commit an offence against poor, suffering, credulous human nature, of greater gravity than any form of unbelief.

The objection which we urge, therefore, against the doctrine of divine inspiration, is the special and limited sense in which it is received and held by the schools. Every new discovery, or application of an old one, adds new evidence against the scholastic doctrine of inspiration; and without intending to deny, absolutely, the possibility of a super-mundane source of spiritual aid and comfort, since it is impossible for finite minds to comprehend the infinity of agents and influences which surround us, it is our firm conviction that the chief and most frequent source of so-called inspiration is from within, *subjective;* arising in a physical state of peculiar sensibility, perceptivity, rather than receptivity; a state in which the higher faculties are enlivened and illuminated, that is, rendered peculiarly sensitive to its surroundings and alive to the finer relation of things—to the occult causes of sensible

phenomena. Our feeling on this subject leads us to affirm possibilities in this direction, rather than to deny. We share the poet Holmes' feeling which led him to write:

"There must be other things besides aerolites that wander from their own spheres to ours; and when we speak of celestial sweetness or beauty we may be nearer the literal truth than we dream." * Nevertheless, one's arguments must accord with his premise.

In an interesting paper on *Mind and Instinct*, the Duke of Argyll observes: "That the human mind is always in some degree, and that certain individual minds have been in a special degree, reflecting surfaces, as it were, for the verities of the unseen world, is a conception having all the characters of coherence which assure us of its harmony with the general constitution and course of things." † The nervous system, in a condition of healthy activity and normal, plenary development, is, we affirm, always inspired. Inspiration is its natural function. The brain and nerves are so generally incapable of exercising their full normal powers; their function is so generally sluggish or ill-performed; the full power of thinking and feeling and willing, in any superior sense, is so often wanting among human beings, that when an instance the converse of this occurs, every obtusely minded member of the human family cries out, Supernatural! Inspired! Divinely inspired! The imputation may have no basis of fact except in the extraordinary, or unus-

* *Autocrat of the Breakfast Table*, p. 152.

† *Contemporary Review*, July, 1875.

ual character of the mental manifestation. The claim is made, too, as a cover or excuse for the short sight or stupidity of less gifted souls. Nothing can be farther from the truth than such a claim. In fact, the nervous system of man, especially the sympathetic system, is not only the centre whence emanates mental manifestations, extraordinary or otherwise—the centre of the emotional life—the divine afflatus—but the normal and plenary exercise of its function *produces* the divine afflatus itself, or the mental phenomena, which, from their unusual and often amazing character, pass current as such.

It is proper to state that physiologists are not agreed in investing the nerves of the Grand Sympathetic with a function so comprehensive as that claimed for it by the writer—the *sensorium commune*, or centre of feeling, being more generally associated with the *medulla oblongata*, or the *thalami optici* and *corpora striata* which form parts of that organ. But there is a strong tendency among physiologists of the advanced school to extend the boundaries of mind in the organism, and especially to limit the function of the two brains and enlarge that of the sympathetic, or ganglionic system. "No one now," says George Henry Lewes, "refuses to acknowledge that cerebrum and cerebellum, although centres of incitation and association, are not the centres of direct innervation; the organic mechanism, in all its physiological processes, will act independently of them." * The later researches of pathologists support this view: "Les sensations physiques de

* *The Physical Basis of Mind*, p. 168.

plaisir et de douleur," says M. Despine, "qui accompagnent les impressions de l'âme pendant les manifestations des sentiments et des passions devaient donc avoir pour siége primitif un organe nerveux outre que le cerveau ; c'est principalement aux nerfs du grand sympathique qu' appartient cette fonction." *

But to return: When in harmonious mood, and fine working condition, the nervous system, in the exercise of its own natural, rightful powers, sees and feels, appreciates and apprehends its higher relations—the divinest truth. And *per contra*, when from any cause, the nervous system is disordered, its function is disordered also, and it can no longer see and feel, appreciate and apprehend, with normal clearness. The judgments of the individual become unsound or defective ; the truth is dimly perceived or completely obscured, and, if inspired at all, it is with error—by the devil. Inane raving takes the place of the bright and beautiful conceptions of normal thought and feeling.

In our view, therefore, true inspiration is *subjective* —from within ; and no mind of unsound condition, or which is nourished with unsound or defective blood, derived from an ill-conditioned body, can ever be normally inspired and capable of dictating divine truth with such certainty as to entitle it to any one's confidence and respect. The "revelations" of such minds disclose their source, for they come tinged with abnormal qualities, and partake of the disordered conditions which give rise to them,

* *Psychologie Naturelle*, Tome I., p. 339.

or through which they pass. Compare, for example, the dismal theology of Calvin, who was supposed to be inspired, but whose liver was evidently atrophied, with the lighter theology of Erasmus and Luther, who were of sound constitution. Or, for a contrast with either of the above, compare that of the merciful Channing, who, although of sound constitution, had less stomach and lungs and a finer cerebral development than either of the latter two. We shall find the inspiration of each of these remarkable men to have a legitimate basis in the constitution of his brain and ganglionic system, and not nesessarily anywhere else.

Whatever else may be true respecting inspiration—and who can claim to have fathomed the depths of this subject?—this is true and susceptible of demonstration, viz.: *that thought and feeling are due to the nervous function; and that the ideas and feelings are colored by the condition of the medium which gives rise to them.* The man whose moral philosophy fairly smells of sulphur, has disordered liver, and indicates it in the sallow complexion and stunted form; and he whose moral philosophy partakes of the tints of the sunbeam, is full of beautiful prophecy, is loving and merciful and sympathetic, has good lungs and digestion, to say the least, though his brain be not above mediocrity. This is the successful preacher, though his inspiration may come from below his diaphragm. He is the man that draws the crowd and pays off the church debt, without tricks or chicanery, though he may be devoid of a moral philosophy of logical

consistency, and can neither read Calvin nor Chrysostom in the original.

The more one reflects on the phenomena of the emotions the more he is inclined to respect the inspiration which comes from sound viscera and good digestion. There is a wholesomeness about it which commends it to one's admiration. Perfect digestive organs give an assurance of healthy blood and properly nourished nerve centres, without which the highest order of thinking is impossible. For this reason, one with a large brain and a small physique is oftener stupid than intellectual. The views of Dr. Alexander Bain, on the special correlation of the nervous, or mental functions, are evidently well founded. "Great intellect, as a whole," he says, "is not readily united with a large emotional nature. The incompatibility is best seen by inquiring whether men with overflowing sociability are deep and original thinkers, great discoverers, accurate inquirers, great organizers in affairs; or whether their greatness is not limited to the spheres where feeling performs a part—poetry, eloquence and social ascendancy."

On the other hand, the brain may be mediocre, like Luther's or Edwards', and possess extraordinary powers of thought and feeling, when united with strong physiques, like either of those men. The highest exhibitions of mentality, however, are confined to individuals who possess large brains supported by strong organic powers, as may be observed in the late Rev. Henry Ward Beecher. Such natures more truly exhibit the phenomena of

divine inspiration than any other. In their veins courses a higher vitalized circulation, affording the nervous system an adequate supply of working force. The highly oxydized fluid, as it courses on its tortuous way through the minute ramifications of the cerebral arteries, may be conceived as setting the cerebral cells all aglow with celestial flame, causing ideas and emotions to scintillate and coruscate, and giving rise to matter and manner which excite the admiration and astonishment of the beholder. Such a subject has a magnetic presence. His eloquence enchains the attention of his auditors. Is he an artist? his creations are ideal. Is he an actor? his personations are life-like. Is he an advocate? he is persuasive and carries his hearers along with him, swaying their judgments as the winds do the forest, or the golden grain ripe for harvest. Or, perhaps, he is a pulpit orator: observe his easy rhetoric and impassioned manner. The spirit of his exordium plays on his face; the electric aureola may almost be seen enveloping his head. As he warms with his subject, on important occasions, the action of his heart increases; the respiration accelerates; the veins of the neck swell to twice their natural size; the face is flushed, and the whole frame is convulsed with strong emotion. His auditors share in the spirit which moves him, and feel the power of the "Holy Ghost" strangely influencing their minds, inducing in them trance, ecstacy, exaltation, or hysterics, according to their several temperaments. This magnetic influence of the orator over his auditors is very generally regarded as due to an

infusion of the Holy Spirit. And it may very properly be referred to such a source; in a certain sense, it does afford evidence of divine inspiration welling up from the Infinite—within.

It is in *states* of the physique, therefore, that the true rationale of divine inspiration must be sought. The phenomenon is due to an exosmose rather than an endosmose of the spirit, and the gift is the property of all well-balanced minds and bodies, and is by no means confined to the clerical class, or the extreme *religieuse*. In this sense Cicero, Hortensius and Demosthenes were undoubtedly divinely inspired when they delivered their incomparable orations. So were Homer and the Iliad; the divine Plato and his philosophy; Shakespeare and his immortal plays; Galileo and his solar discoveries. So likewise were Spencer and Evolution; Darwin and Natural Selections; "George Eliot" and *Daniel Deronda*, and other thinkers and discoverers in the departments of letters, science and philosophy. And yet, the highest powers ever conceded to any of them, or claimed by any of them, were those which are in the possession and common inheritance of ordinary men and women. It would be gratuitous to assume that the genius with which they were and are endowed and to which the inspiration of their works is due, was moved by a supernatural agency. Such an assumption, it is needless to repeat, would also be in conflict with the conclusions of science or sound philosophy. But if the great minds in the secular departments of the world's thought and work are not supernaturally inspired,

were Moses and Elias? The authors of the Book of Job and the Psalms? Paul and the authors of the Gospels? Mohammed, Gôtama and Swedenborg, and other great and divine leaders of religious thought and opinion? Is supernatural aid more necessary to the theologian than to the philosopher? to the religious *devotée* than to the scientist? Does not each bring to his calling—if not the same faculties—the same devout purpose? Is not the mental function the same in each? Are they not both actuated by the same love for truth and fidelity to the Supreme? And is not the source of their powers the same? However disconcerting the answer to these questions may be to the adherents of old traditions and obsolete forms of thought and belief, there is certainly no good reason to suppose that the favor of Heaven is specially reserved for the exclusive benefit of any class or caste in the ranks of science, theosophy, or philosophy. "Whoso speaks truly," says Novalis, "is full of eternal life."

But, it may be asked, if man has no dependence outside of himself; if he is relegated to the dominion of a pure naturalism, why should he feel dependent on, or recognize his subordination to, a Superior? To which we answer: that which the individual feels respecting his dependence upon powers unseen and superior to himself, is by no means ill-founded or illusory. The Conscious is dependent upon the Unconscious; the finite upon the Infinite. The individual is a part of the universe of being and a sharer of fortunes to which he does indeed contribute, but which come independent of him. His feeling of

dependence is, we repeat, quite legitimate; and were there no resources of succor outside of himself, nor refuge in trouble, darkness and disaster, the individual would be one of the most miserable and helpless of creatures. The confidence which he reposes in powers superior to himself indicates the existence in the heart of a moral polarity which involuntarily determines his relative position to the great centre about which he revolves, and to which he maintains no uncertain, unfixed or indefinite relation. Just as the planet obeys a definite law of polarity in revolving around the sun, and the atom, likewise, in its relation to the molecule, and the molecule to the planet of which it is a part, so the individual obeys a similar impulse in asserting his moral relations to the centre of the moral universe. The fact of recognizing his subjection to an imperious necessity does not necessarily imply the existence of a personal Agency in control of the individual's destiny. The individual feels in that regard as one might reasonably suppose the planet would feel, had it the power or capacity to feel, toward that power, the sun, which so imperiously controls its destiny. The sun and the earth sustain the relation of parent and child. While possessing natures by no means dissimilar, except in degree, the sun is the source of all those forces which we ascribe to nature. It maintains the earth's movements, causes the procession of the seasons, the reproduction of vegetation—seed-time and harvest—growth and decay; the fertilizing showers of Spring and the withering frosts of Winter, and all in their proper

order and time. The very life-blood of nature is perennially renewed by it, causing myriads of conscious creations to express, in every possible way, their gladness and delight. In all these involuntary manifestations on the part of the earth, the Parent is unmistakably recognized, and his authority acknowledged. And we can easily imagine, if the earth were sentient, and could give audible utterance to its own sense of dependence, with what supernal attributes it would invest the sun, its visible parent and protector, and with what adulatory prayer and praise it would clothe the expression of its sense of obligation and gratitude! But it would be delusive as an intelligent conception, though resting on a basis of reality and fact, easily verified, not only by the evidence of the senses but by scientific observation;—a truth respecting the power and supremacy of the solar orb—a fallacy respecting its nature and mode of asserting its supremacy.

We repeat, then, that this inborn feeling of dependence upon a power, or powers of infinite supremacy, is quite legitimate. It is one of those "bottom facts" in psychology to be accepted, investigated, and explained, in the light of such knowledge as we possess of ourselves within and the universe without; and not to be dogmatically settled by the delusive dictates of the imagination, or of the still more delusive authority of consciousness, whose promptings declare only the ultimate of *feeling*, and can lay no just claim to a knowledge of the why or the wherefore.

Again: the individual is dependent upon his race

for blessings of even greater significance than those he derives from lower material nature. The higher faculties and relations of the individual are developed by countless influences showered upon him by Society—the social state. As a member of the human family, he is not unlike a drop of water in the broad ocean—moved by influences which move the whole. Though he may have some little individuality of his own, as a drop of water possesses gravity and cohesion, he is largely controlled by influences which control the whole and which the whole embodies. He is to the race what the atom is to the molecule of which it is part; and although he is a microscopic deity, so to speak, and contributes to swell the sum total of the divine force in humanity, the little he gives is as nothing compared to what he receives in return. The resources of the individual are in fact, treasured in the social organization. In it the divine energy may be said to be potential.

A well-organized society is, therefore, a vast reservoir of forces, most beneficent, from which the individual draws without stint or measure and without fear of exhausting the supply. It gives to him freely, vast benefits, and is replenished by the giving. From the social state flow the arts and sciences; government, invention, and discovery; ethics, religion, literature, and philosophy; in brief, civilization, with its countless providences, all for the benefit of the individual, and the answering of individual supplication. The law of conservation and correlation of energy operates with beautiful consistency

in the relations of the individual and society, as Mr. Herbert Spencer has so ably pointed out; the result of which is the means to supply the objective needs of every individual. It is itself a grand providence, and reflects the perfection of divine wisdom to a degree incomparably greater than any supernatural plan of salvation that was ever revealed to the human understanding. If the assertion seems to the reader at first thought, extravagant, its truth will be made clear to him by recalling the fact that this natural plan of salvation, to which we refer, includes all the "supernatural" agencies which have ever been recognized by man. It is incomparably greater than any, because it embraces all of them.

"In modern days, 'Society'—'the State'—has become strangely, almost fearfully complex, influenced by a hundred causes, encompassed by a hundred perils, wrought upon by a hundred agencies—often slow in their operations, often hidden in their sources, often difficult of discovery even by the trained eye, often difficult of estimation even by the instructed mind. The welfare, even the safety, of a community like ours, depends upon the thorough comprehension of a multitude of concurrent or conflicting influences, some economical, some moral, some legal, which would task any ability and any experience; years of discipline and study are barely sufficient for the work, as those feel most who have watched it closest; it demands, as we habitually recognize (in words at least), the *best wisdom* and the *best virtues* of the nation."* How blind are we

* Mr. Greg, *Contemporary Review*, Vol. XXIII., p. 862, 1874.

to the just importance of this great truth! The heavens may supply us with heat and light, kindle new life in old forms, and clothe the earth with perennial verdure; it may renew nature's life-blood and keep it coursing on its tortuous round; but all this, important as it is, does not equal that beneficence which society, properly organized, is capable of dispensing to every creature within the circle of its influence.

It is on society, then, that the individual is chiefly dependent for redemption—the highest good. In other words, it is in the systematic organization of human science and skill, the potentialized and accumulated forces of innumerable individuals, that the individual is to find redemption from the endless forms of disease and wretchedness, moral and physical, under which he now suffers to such an appalling degree, and for relief from which he has been mistakenly taught to rely upon supernatural aid. With the aid of the light which science reflects on his pathway, man will ultimately supply himself with those conditions of life which he has so long been idly praying for, and which are indispensable to his moral and physical well-being, and be able measurably to remove the causes of the miseries which he has suffered for ages and which he still endures. What his hand, under such guidance, has already done for the floral and agricultural kingdoms—in growing new species and improving old ones; what his knowledge has already accomplished in modifying and perfecting the breeds of domestic animals—in developing in them those traits which serve him

best and please him most; what his skill has already achieved in perfecting agriculture, manufactures, commerce, finance, engineering, and other departments of mechanical and industrial art it will ultimately do for society, mastering the laws of sociology and perfecting a government which shall secure to every individual the blessings of which he hath most need.

Let us not deceive ourselves, nor permit pious impulses which, however grand and noble in themselves, are blind and in need of intelligent direction and interpretation, to overshadow or eclipse the light of reason, that "light which lighteth every man that cometh into the world." "The earth is the Lord's and the fulness thereof," no doubt. The atom is not its own independent of the molecule, nor the molecule independent of the planet. Neither does the individual belong to himself, but to the species of which he is an insignificant part. A wrong to one is a wrong to all. This is the intelligent verdict of the devout heart and the informed mind upon the evidence presented, as we have seen, by reason and the universal experience of mankind.

The desire, so prominent in religious experience, to submit one's will to the divine Will; the longing for goodness, purity and truthfulness; the striving after peace and harmony—after at-one-ment with the universal good and separation from the universal bad—means, when transcribed in intelligible expressions, that there is in the human soul a conscious tendency—struggle—to attain unto the moral proportions of the ideal man, to become what he

ought to be, what he was designed to be, and what he ultimately will be. The adoring, worshipping mood; the recognition of a superiority which has no superior; the spirit of obedience and self-abnegation; the disgust of lying and hypocrisy; the love of truth and truthfulness, etc., mean this, when they mean anything at all—when they are not "put on" through fear of eternal torture, or for business ends —whether the symbol of supremacy in the mind be a brazen image, a flame of fire, a crucifix, or the unknown God.

It has been urged that the instinct of prayer which is universal in the human heart is evidence of a Beneficence above nature and superior to humanity; that it presupposes an ear to hear and a Beneficence to answer. The force of that argument is weakened, however, by the fact that the purpose of prayer is fulfilled by praying. The supplicating mood puts the supplicant in a condition to receive the benefits he feels the need of. We cannot, therefore, agree with Kant in respect of the inutility of prayer. He says: "To ascribe to prayer other effects than natural (subjective psychology) ones is foolish and requires no refutation; we can only inquire, should the prayer be retained on account of its natural results? To which the answer is, that in any case it can be recommended only according to circumstances; for he who can obtain the vaunted advantages of prayer by other means, will stand in no need of it." * Very true. But can the "vaunted advantages of prayer" be obtained by other means?

* Cited from *The Old Faith and the New*, pp. 129–130.

So far as objective benefits, yes; so far as subjective benefits, no; at least not until one mental function can supplement another.

Strauss' views on the subject have at least the merit of being logical. If one go on praying for objective benefits, he observes, which, surely no sensible man will ever do, knowing all the time the futility of the exercise, he plays a game with himself, "excusable indeed, in view of its momentary effect, but neither consistent with dignity nor devoid of danger."* Nevertheless, man will go on exercising the function of prayer, though he remain as ignorant of its rationale as he is of that of any other function of mind or body. It is manifestly unwise to ignore and try to circumvent a function because we know not how or why it should exist.

The narrower view of special dispensations, special interpositions, and intimate personal relations and intercourse with a personal Deity, in the usual and shadowy sense in which it is taught, seems to us inconsistent with the course and development of human history, as well as with the maturer conceptions of the philosophic mind. The position of the race in the universe is unlike that of the individual. While the latter must look to the former for hope and succor against the ills of life, the former must look to themselves, to their own aggregated resources, for the good they would have, and the ills they would avoid and overcome. This conclusion becomes more and more obvious with every new experience of nations and peoples. It is exempli-

* *The Old Faith and the New*, p. 128.

fied in every organization of human endeavor for the public good. The public sense is widening daily in the direction of public responsibility. Not that we have ceased altogether to rely on "supernatural" agencies or powers. Quite the contrary; for no longer ago than 1876, when the West was visited by the grasshopper plague, which severely devastated some sections and produced great suffering, the devout governor of Missouri appointed a day of fasting and prayer, with the view of arresting the plague. And quite recently, in Brooklyn, the wealthy pastor of a popular church appointed a day of prayer in aid of a committee whom he had appointed to collect money to pay off the debt of the church! These are curious relics of an old custom which would excite one's sense of the ludicrous were they not identified with the worthy and venerable.

The course of religious people during President Garfield's illness affords a striking illustration of religious mediævalism projected into modern times and at variance with higher religious thought. Prayers were offered for his recovery on every hand. At the close of the first month, his symptoms became, for a few days, more favorable, which the religious press attributed to the influence of prayer. The *Congregationalist* made haste to improve the occasion by saying:

"We regard the physical improvement in the condition of President Garfield during the past week as an answer to prayer. There is no denying the very serious nature

of the wound and the extreme solicitude of the surgeons, so that the danger in which he lay on the morning of the first Sabbath of this month was great. But on that day the united and fervent prayers of thousands of congregations—of the entire Christian heart of the land—went up to God for him; while the same was probably true of nearly every Nonconformist church in the Fatherland. And from that hour to this millions of requests have besieged the throne of grace that—if it be possible—this cup may pass from us. Is it too much to think—nay, are we not bound to believe—that it has been in tender answer to these supplications that, so far, the sufferer has been so wonderfully carried over the imminent dangers which so thickly beset him."

There is, nevertheless, despite these instances, a growing self-reliance, on the part of society, in dealing with those dangers and exigencies which menace and complicate human affairs, and a decline in the practice of submitting such affairs to the guidance of a Will outside and independent of the body politic. If we limit our observations, for the purpose of getting a clearer or more precise view of the subject, to the conduct of nations, and especially to that of those advanced in the intellectual life, we shall find indubitable evidence of a growing sense of national responsibility for the woes it would avoid and the good it would secure. The instances of servile bowing and absurd attitudinizing; of abject praying and frenzied lamentation; of incense burning and prolonged fasting, in order to appease, or propitiate an angry Deity, and avert, thereby, a national, or an individual calamity—practices which have been

so widely prevalent in the past—are now happily passing away, or their indulgence confined mostly to the barbarians and a few semi-civilized nations of the East. The spectacle of a people falling on their faces, or going mad during a solar eclipse; or of rushing to their temples because of an earthquake; or of getting down on their knees, or going without their meals, to stay a drought, the sufferings of a famine, the ravages of the locust or grasshopper; or to prevent a foreign invasion, or the approach of a devouring pestilence,—is only equalled in absurdity by that of attempting to cure epilepsy with the crucifix, congenital depravity with moral suasion, rheumatism with prayers and anointings, or morbid impulse with the gallows! These absurdities, and many others of analogous character are, it must be confessed, not altogether extinct anywhere; but there is, at the same time, a growing tendency everywhere manifest among the better classes, to look upon them as lingering relics of ignorance and superstition, and to substitute in their stead an improved philosophy and a more dignified, self-respecting worship.

This freedom from the restraints of old-time beliefs and ecclesiastical customs, is of little significance in itself; instances of it are simply straws which indicate the course of theological wind. They are the more pregnant with meaning that they are respectfully tolerated, if, indeed, they are not actually encouraged, by the better sense of Christendom, and find their cleverest abettors and apologists among nations and peoples the most advanced.

And what is of equal significance, the examples multiply with the increase of civilization, than which no evidence could be stronger or more satisfactory of a waning confidence in the old faiths and a growing confidence in the new.

The old faiths, having been tried and found wanting, one voluntarily turns to the new; and yet, it is not the new; for, although possibly new to the later generations, it is in fact older than the Christian faith itself. It is the faith of freedom and self-reliance, as opposed to that of slavery and ecclesiastical restraint;—of self-helpfulness, in contradistinction to dependence upon another. It is a faith founded upon a knowledge of the Divine order and Supreme purpose, as indicated or revealed in the intelligent experience of the race, and embodied in the pertinent command "Work out your own salvation";—a faith which demands of the individual the taking of those temporal risks to his personal fortunes which are necessarily incident to freedom and self-reliance. It is a faith of endeavor, rather than of belief;—a faith that grows out of the conviction of human responsibility for error—for its cure if not for its existence, and of trust in the great Unseen for justice rather than mercy—here, as well as in the Hereafter. One sees that faith crudely exhibited in the Greek mother execrating her son because he returned alive after defeat in battle; in the heroism and self-denial with which the Greek was expected to work out the problem of his life, as well as in the maxims of his philosophers and in the anecdotes of his writers. "God is

the brave man's hope, and not the coward's excuse," says Plutarch. When Ajax was about to engage Hector in single combat, he "bade the Grecians to pray to the Gods for him." Meantime, he busied himself in preparing for the fray, "by putting on his armor." A similar faith in prayer was exhibited by Hesiod, in directing his husbandman "before he either plough or sow to pray to the infernal Jove and the venerable Ceres, but with his hand upon the plough-tail." * In the old Roman maxim and political war-cry, "*Vox populi, vox Dei*," the unity of divine and human agency is forcibly annunciated. It is likewise recognized in Cromwell's memorable words to his undisciplined soldiers: "Trust in God and keep your powder dry." And again, in like manner, by Prussia's great military Captain, Frederick the Great: "Providence is on the side of the heaviest battalions." However much the lips sustain the idea of an overruling Providence in the affairs of men, the practice of the moderns is in harmony with that of the Greeks and Romans, as shown in the preparations which they make to meet contest in the field, on the sea and in the workshop. Common-sense is more potent in shaping the practical affairs of the Anglo-Saxon than sentiment, religious or otherwise. Before this test his belief succumbs when success is in the balance. It is a practical skepticism, it is true, for which, however, no one was ever tried for heresy. Be that as it may, that general, or that statesman, thinker, or teacher, who acts upon any narrower

* See Plutarch's *Morals*, Vol. I., p. 178.

conception of human responsibility or of Divine agency than this, neither rises to the height expected of him, nor fulfils the trust reposed in him by his fellow-men. Only he fulfils the ideal part who recognizes the sublime truth that, while the course of civilization is shaped by powers superior and Divine, under the laws of the physical and celestial environments, they are incarnated in humanity and embodied in the human form. "The highest god dwells invisible in that mystic, unfathomable visibility which calls itself 'I' on the earth." *

* Carlyle.

PART VI.

CRITIQUES ON "THE UNITY OF DIVINE AND HUMAN AGENCY."

In Deo vivimus, movemur, et sumus.—*Paul of Tarsus.*

PART VI.

CRITIQUES ON "DIVINE AND HUMAN AGENCY."

THE relation of Divine and human agency forms a subject of such transcendent interest to the philosophic mind that we feel justified in making this polemical contribution to it.

The discussion which follows, it may not be improper to state, was provoked by an article in the foregoing pages, entitled *The Unity of Divine and Human Agency*. The view presented by the author of that essay being neither scholastic nor scientific, but what he regards as rational, naturally enough evoked hostile criticism from both schools, the scholastic and the inductive. We have, therefore, selected from the many critiques sent us, two of the best approved, one from a pure scientist of the Spencerian type, the other from a learned theologian of the St. Thomas Aquinas mould, and give them publicity in this connection, together with such answer as the author of the article under criticism has thought proper to make. We begin by giving the critique from—

I.—THE SCIENTIFIC POINT OF VIEW.

A striking instance of the difficulty of the intellect to reconcile the fabrications of the imagination with the laboriously wrought out truths of reason and experience, is found in the article on *Divine and Human Agency*, which appears herein. No one acquainted with the position which science occupies in the realm of knowledge will fail to admit that on the question of human aspirations and the higher emotions, it is silent. The author of *Divine and Human Agency* evidently recognizes this fact and seems to think it necessary, in seeking a solution of psychological problems, to leave the tracks of science and allow the mind to revel at large in the regions of the mysterious and hypothetical, and to offer doctrines for acceptance opposed to the already established truths. We are told on page 174 of the article in question, that—

"In matters relating to the psychical, there is good reason in following with certain precautions the lead of intuitive minds. They are entitled to speak with authority, in some degree, of things which are beyond the capacity of the common plodder and which lie outside the domain of pure science."

Flights of imagination, and predictions from intuitive feeling, do not serve as convenient guides in the complications of human relationships; and to regard them as infallible authority is assuming too much. A community imbued with such ideas as these, would be disconcerted by its own errors. We assert

this in spite of the opinions of the "best minds of the cultivated Greeks." Our author, quoting Socrates in support of his position, reminds us of Christians using the names of Bacon and Newton to give support to the doctrines of their faith. Socrates, Bacon and Sir Isaac Newton are authorities in mental and physical philosophy, having given their minds to the study of those sublime subjects; but in theology they were contaminated by the doctrines of their time; or to use Bacon's own words, they were given up to the "Idols of the Theatre."

Of this strangely incongruous essay the following words, italicised in the essay, are clearly meant to be the keystone:

"This is true:—that thought and feelings are due to the nervous function; and that ideas and feelings are colored by the condition of the medium which gives rise to them." p. 188.

Here we have at once a physical basis for inspiration, a recognition of only one kind of agency or law; and if the subject were elaborated upon that basis there would have been no vital question at issue between us. With a mind free to inquire, unwarped by current teachings, anxious to find out the order of phenomena, such terms as divine agency, inspiration, in their ordinary parlance, have no place. There is but one agency in the world, viz.: the agency of nature; human, chemical, mechanical agencies, are simply divisions of the one general phrase, natural agency; (it may be well to state that we do not place these divisions just given

in the same category) so that Divine agency, in order to be understood must be analyzed, and its constituents placed in their proper class.

If the author uses the terms "Divine" and "Inspiration" as expressing a superlative—the only consistent sense in which he can use them—it is, to say the least, misleading, for to such words ideas are accreted involving a range of theological doctrine which he would not endorse. We cannot suppose the other alternative, namely: the orthodox Christian interpretation. He says:

"Cicero, Hortensius, and Demosthenes were undoubtedly divinely inspired when they delivered their incomparable orations. So were Homer and the *Iliad;* the divine Plato and his philosophy; Shakespeare and his immortal plays; Galileo, and his solar discoveries. So likewise were Spencer and Evolution; Darwin and Natural Selection; George Eliot and *Daniel Deronda*, and other thinkers and discoverers in the departments of letters, science and philosophy."—p. 191.

Yet we find lurking in many passages a love of the mystical, quite opposed to the ideas expressed in the words above quoted. Alluding to man he says:

"He lives immersed as in an ocean of influences, no less divine because physical and human. He feels the pulse of the Infinite Heart in every beat of his own, and is warmed, cheered, enlivened and sustained by all those mysterious influences of mind and matter which constitute the infinity of being around him. His trust in the divine Paternity is instinctive and spontaneous. There is a feel-

ing within him assuring him that He who creates can sustain; He who provides for the beginning can provide for the end. And this feeling is, we repeat, instinctive with every creature in a normal condition, be his religious faith what it may."—p. 183.

Further on we read:

"This magnetic influence of the orator over his auditors is very generally regarded as due to an infusion of the Holy Spirit. And it may very properly be referred to such a source;—in a certain sense, it does afford evidence of Divine inspiration welling up from the Infinite—within" —pp. 190–191.

Between these two passages we have a glance into the scientific side of our author's mind:

"The more we observe the phenomena of the emotions, the more we incline to respect the inspiration which comes from sound viscera and good digestion."—p. 189.

Then, again, the author relapses into his metaphysical mood. He finds an illustration in the law of gravitation, and endeavors to show that the relation of the earth and sun is analogous to the relation of the human mind and some unknown moral force or forces. The human mind is not an entity swayed by a greater power, like the earth by the sun; it is a continuous evolution of states, changing at every new experience, limited in these changes of course by the fixed law of the organism. "Moral polarity" is an excellent phrase, if we could find the pole star in ethics; but there needs

to be considerably more light thrown upon the science of psychology before we are warranted in drawing such an inference. What is already known of psychology tends towards the opposite direction.

In the days when men were blinder than they are now, when the Church was the chief source of knowledge, there was an absolute incapacity on the part of the people to investigate. Those times were therefore rife with the miraculous. Because the actions of the teachers of men could not be explained, there was at once attributed to them the power of working miracles; and so, likewise, all insoluble natural phenomena, were caused by Divine interposition. Even in our own day, a number of phenomena, having different causes, are classed together and ascribed to spiritual agency. Our author has not escaped from this human infirmity in his treatment of *Divine and Human Agency*. He sees human power in different directions and calls it divine, and inspired. Employ capital letters for Providence, Infinite, First Cause, etc., and you are forming obstructions to the solution of problems. If these words represent realities, inquiry is an insult to the Being they signify; if only terms, they are changeable with the growth of knowledge and have no personality. For the bold imagery and the fantastic hypotheses of the poetic mind such words are useful and apt; but applied to science they become an abuse and a hinderance to the understanding. Witness the following sentence:

"The nervous system of man, especially the sympathetic system, is not the only centre whence emanate mental

manifestations, extraordinary or otherwise—the centre of the emotional life—the divine afflatus;—but the normal and plenary exercise of its function produces the divine afflatus itself, or the mental phenomena which from their unusual and often amazing character pass current as such."—p. 186.

At the phrase "divine afflatus" we have a digression, part of which must be quoted:

"It is proper to state that physiologists are not agreed in investing the nerves of the grand sympathetic with a function so comprehensive as that claimed for it by the writer." * * * "But there is a strong tendency among physiologists of the advanced school to extend the boundaries of mind in the organism, especially to limit the function of the two brains and to enlarge that of the sympathetic or ganglionic system."—*Ibid.*

This doctrine is supported by citations from the late G. H. Lewes, and others. The author, in giving scope to the scientific tendency of his mind, is satisfied to regard the grand sympathetic system as the prime motor of "mental manifestations, extraordinary or otherwise"; but the pleasure of entering into the mystical world seizes hold of him, and he must needs call it "divine afflatus." Why? We do not know. That is the enigma that runs through the whole essay. For a scientific inquiry, such an expression as "divine afflatus" is altogether out of place, and we are surely not mistaken in regarding this article as a scientific inquiry. We are anxious not to be misunderstood here. The scientist must of course give freedom to his imagination. By it, Newton

discovered the law of gravity; Haüy, the regularity of the structure of crystals; Göethe, that stamens, pistils, petals, etc., are simply modifications of leaves. But his imagination must not draw expressions from the realms of ontology and theology and apply them to unclassified phenomena, and thus usurp the authority of science. How far is the reader enlightened by calling the phenomena arising from the grand sympathetic nerves divine afflatus? It teaches nothing, it adds no new idea, nor does it assist in interpreting its antecedents. Divine afflatus has no meaning, is linked to nothing, and therefore should be avoided by the investigator.

We have purposely omitted, until now, to call attention to some few extraordinary expressions, so entirely out of character with the essay, that they amount almost to the grotesque. On page 182, we read:

"Man lives and moves in his Creator, and his Creator in him, in very deed. This expression embodies no mythical idea. It is no beautiful speech-figment—no metaphor—no untranslatable poem, devoid of fact and reality, but a real practical truth to be taken in its broadest and most literal signification. Man is truly a part of the Creator. His life is a finite expression of the Infinite Life. He and his Father are one."

Again,—in the same connection, the author asserts that,

"Man is the conscious recipient of countless blessings from the Father every moment."

Have we an optimist here? This last sentence answers in the affirmative, indicating that the existence of his fellows is a beautiful and delightful paradise. We would like to remind him of the painful struggles from barbarism to civilization; the sufferings arising from despotism, before liberty and justice were known. Who can calculate the evils of poverty, pain and crime in the present enlightened age? or estimate the depths of mental agony, inseparable from the emotional nature? How few there are, who are "recipient of countless blessings from the Father!"

We are at a loss to understand what is meant by "man lives and moves in his Creator," "he and his Father are one," etc. Such language may become the average pulpit orators, but we say, with all gravity, it is unseemly when used in treatises claiming to be scientific.

Were we criticising a sermon, we would ask the preacher for proofs of this Creator and Father. We cannot comprehend a Father witnessing scenes of suffering and providing no means of relief. If the Creator is omnipotent, he is not all beneficent. If all beneficent, he is not omnipotent. The present is certainly better for the sufferings of the past, and the future will reap the benefit of the sufferings of the present; but not one iota of pain is spared the known and unknown heroes of mankind. Their works have wrought out peaceable fruits as regards posterity, while they themselves reaped no good. It can be no expiation if one man shall suffer that others may benefit by the suffering. That suffering

is necessary to a complete mental growth is universally accepted. Experience teaches it. Omnipotence and beneficence would prevent it; and either this Creator has not the power to alter this law, or else he has not the desire. The law exists, mankind suffer, and we must form our judgment of a supreme Ruler from what we observe, not from any one's dictum. Law is beautiful because it is exact; but there is nothing loving about it. Laws relating to the human being individually and collectively, and laws relating to the outside world work out their rigid and unrelentless ways, independently of human intellect and volition. It behooves mankind therefore to study these laws and try to live in conformity with nature. It is for their best interests so to do. The dictum of necessity is the only fiat science can recognize, and it would be well if the young mind were turned in this direction, instead of being taught to shirk problems, or leave them in the hands of God, or in the hands of the so-called ministers of God. We do not fail to recognize, of course, that at present the large majority of people need the helps that the current theology furnishes. Nor do we fail to recognize the invaluable services rendered by priest and preacher; nor the noble examples of devotion to their fellows which many of them are. To-day, the ministers of religion are a necessity, made so by ignorance and superstition.

Strangely enough there are sentiments in the last four pages of this essay which support the above argument; in fact the author's scientific mood again comes to the surface.

"The public sense is widening daily in the direction of public responsibility. There is a growing self-reliance on the part of society in dealing with those dangers and exigencies which menace and complicate human affairs, and a decline in the practice of submitting such affairs to the guidance of a Will outside and independent of the body politic." * * * "The instances of servile bowing and absurd attitudinizing; of abject praying and frenzied lamentation; of incense burning and prolonged fasting in order to appease or propitiate an angry Deity—and avert thereby a national or an individual calamity—practices which have been so widely prevalent in the past—are now happily passing away." etc.,—p. 201, *et seq.*

These sentiments acquit the author of the charge of orthodoxy, but not of the charge of incongruity. How can the doctrine of the fatherhood of the Deity be accepted, while the Christian doctrine of prayer is rejected? He certainly does reject the Christian doctrine of prayer. We read—

"That the purpose of prayer is fulfilled by praying. The supplicating mood puts the supplicant in a condition to receive the benefits he feels the need of."

This may be true, so long as the objects of prayer are within the control of the one who prays. But in the case of a petition for things beyond the power of the petitioner to alter, for instance, fair weather during a voyage, there can be no granting such a prayer; the laws of nature must have their course without any regard to the desires of earnest supplicants. Two Christians sailing in opposite directions at the same time cannot have wind and tide with them.

We heartily agree however with the author's views of prayer, when he reminds us of Cromwell's celebrated words: "Trust in Providence and keep your powder dry." It has been said that the true definition of prayer is communion with our ideal goodness. It might be more consistent for Christians to accept such a comprehensive view of prayer as this definition involves than the present superstitious doctrines of it of the schools.

We venture to remark in conclusion that what has been said of human agency, in this interesting essay on *Divine and Human Agency*, has evinced a wide scope of thought and has helped to bring before the mind the proper relation of the individual to the community; and it would have been more instructive to us, had not the author baffled and confused us by evoking a mysterious agency, he is pleased to call Divine.

SCIENTIST.

The scientist having exhausted the sphere of his vision without fully comprehending the author's meaning, it will be interesting to turn our attention to the subject as observed from

II.—THE THEOLOGICAL POINT OF VIEW.

The logical fault of the essay upon *Divine and Human Agency*, in the foregoing pages, lies in the multiform and contradictory meanings which the writer assigns to the phrase, *Divine inspiration.* It was due to the interest and the gravity of the subject to give the theological definition. The

essayist no doubt might retort that theologians themselves cannot define, with exactness, wherein it consists. "Where," he might ask, "is your own theory of inspiration? Either admit mine, or substitute another. This finding fault with what is proposed, and yet proposing no substitute, shows the very helplessness of a miserable obstructiveness." This we deny. The Scripture *does* contain and the Church Catholic *does* hand down a doctrine concerning inspiration. For what does the Holy Scripture claim to be? The Word of God, the Oracles of God *; God-breathed, and what must this imply? Surely that, in a special and particular sense, not in that of a vague afflatus, or an abnormal development of nervous function, there is a mighty and a mysterious presence of God in his Word. This definition is sufficiently wide to take in all the theories of inspiration taught in Judaism, and in Protestant and Catholic Christianity. The specific difference between it and the theories and fancies of our essayist consists in its entire harmony with the right and normal relations of the Divine and the Human. Perhaps the most striking feature of the Bible is its supreme adaptation to human conditions. There is no Pythonic fury in the Scriptures. All the prophets, Apostles and evangelists appear to have been men of a singularly robust and calm temperament. Despine himself would be apt to think them quite deficient in nervous development. The impression conveyed by the writer is,

* 2 Tim. iii: 16.

that biblical characters were extremely impressionable, excitable and dreamy. No such idea of them is communicated by their writings. These describe the most startling visions in a cool matter-of-fact style. The Apostles strike us as remarkably unsympathetic men. They were evidently blessed with good digestions, and three of the most favored ones slept soundly on the night of the Master's betrayal. We must look deeper than merely physiological causes for the source of inspiration. Strauss, whom our essayist appears to admire, failed signally, in his attempt to mythologize Jesus; and his vicious historical method, which never sticks at sacrificing a fact for a fancy, deprives even his merely intellectual processes of due credit.

The essay is only another illustration of the futility of carrying the scalpel, the thermometer and the other appliances and criteria of mere natural and physical science into the domain of the spiritual and the supernatural. We are no better situated than was Galen or Hippocrates for the discovery of the nature of the union between the material and the spiritual in our own mysterious self; and all the physiological research from now to doomsday will not throw any clearer light upon the problem. Instead of diving into the depths of inner consciousness and studying the subjective, which our essayist holds to be the only proper ground and source of inspiration of any kind, we prefer with the majority of the human race, (and the universal consent of mankind is one of the infallible media of truth), to look above and beyond us for that revealed and in-

spired religion which came down from the Father of Light and shone forth in the Incarnate Word, Jesus Christ, the Divine and the Human, the type and the fulfilment of that Divine and human agency which our essayist finds so much difficulty in explaining.

Whence came "this pleasing and satisfactory belief of the infusion of ideas into a finite mind by the Infinite Mind?" Did it originate in changed cerebral conditions? Despine, copying Ovid,

"*Timor primos fecit Deos,*"

finds the origin of religion in "*le sentiment du merveilleux, l'admiration, la crainte et l'espérance.*" But even these sentiments have an external cause,—an objective origin. Cicero says that there never has existed a nation that did not have an idea of the existence of God and of some religious *culte.* Why not choose the clearer hypothesis, if not the historic fact, that Religion, objective Inspiration, Revelation, have existed from the beginning? Why not hold with Augustine, that God imparted a tradition to the first parents of the race; that it survived all civilizations and barbarisms, and, though corrupted or modified, it never completely faded away from the mind or the conscience of man?*

The family resemblance of all religions points to a common origin. The religious traditions of all races are singularly accordant with the inspired Records. This idea is well illustrated by Max Müller.†

* *De Civitate Dei*, c. ii.

† *Lectures on Science and Religion, Introduction.*

To ascribe the positive and formulated doctrines, beliefs, customs, and liturgies of this essentially one, though accidentally variant "world-creed," to purely physical causes, nervous excitation, etc., is at once unwarranted by history, and in fact, by the simplest perceptions of reason. The effect is out of all proportion to such a cause. Our specific point of departure, however, from the essayist as well as from Müller, is our profound conviction of the final and consummate nature of Christianity, to which all religions pointed, and all the religious hopes of the world tended. There can be no religion to succeed the Christian,—none to take its place. There can be no further intrinsic progress in religion except as inducive to Christianity. It is the crown and the end—the Alpha and the Omega. Christians that talk lightly about the possibility or the special aptitudes of any religion that denies, or excludes, or endeavors to consort with, or to equal, Christianity, have ceased to be distinctively Christian. Either this is true or there is an end of the Scriptures, and an end of even natural religion. If Christ is not the Messiah, the God-Man, and his religion the perfect and therefore final and only one, there is no logical foothold in any devotional system that could claim its place; for no other theory, doctrine, or ethical system can ever appeal, or has ever appealed, to the strongest and the least cultivated intellect alike, as that Divinely inspired and revealed faith which the essayist truly calls old, as old as the world, but not vaguely and imperfectly known, but, from of old, living and logical, bearing

within it the promises made unto our fathers, promises nobly and triumphantly redeemed by him who said, "Before Abraham was, I AM."

In thus offsetting the essayist's psychical and physiological theories of the origin of inspiration by a direct appeal to the historic method of argumentation, we are aided by himself. He admits that the best minds of antiquity "did not doubt the familiar interposition of the gods." But he says they were minds untrained in science. Yet one would suppose that here our author would have made one of his strongest points in favor of the subjective origination of all "inspired" and religious thought. He refers to Socrates "the wisest of men"—though he should have read Plato's instead of Plutarch's, explanation of the Dæmon. Surely, Socrates was not a mystic or a poet, but eminently of a scientific mind; yet he who analyzed the subtle operations of the human intellect, who made the pursuit of truth his life-long study, whose powerful intellect discerned the verity of the Divine Unity, never dreamed of finding his ideas of divine things in the *ægræ somnia mentis*, but sought their origin in a power outside of himself. Nor is it historically true that there has been essential change in the idea of inspiration, "from the shadowy time of human development when man referred every emotion which he felt, idea which he thought, or desire which he willed to an agency outside himself." It is thus that the essayist changes the meaning of his terms and proceeds very gratuitously to refute lunacy and delusion, under the name

of inspiration. Hitherto he admits that there may be an inspiration perfectly in accord with the fullest sanity of intellect, and he cannot nor does he deny the possibility of inspiration in the theological and Scriptural acceptation of the word. Our task with him, then, would properly end here, for we deny that the ravings of religious fanatics, the inspiration of pulpit orators, etc., come under the theological definition. Besides, theology is perfectly justified in declining to consider an argument which refuses to accept her technical definition of inspiration; an argument which virtually identifies the source of Paul's inspiration with that of *Daniel Deronda;* which strives to resolve many of the Scriptural ideas of the Divine Agency into the perverted mental states of those through whom the revelation came; and which, in fine, discovers in society and in sociological conditions, a higher providence and a more reasonable service than that which the old faith, here declared effete, presented to mankind. We say that theology, with perfect dialectic justice, can say *transeat*, or *nego consequentiam*, to an argument which will not admit the *primum theologicum* itself—for theology, of course, rests upon revelation and maintains its theses upon the very ground which our essayist rejects. We think, however, that we have shown the inadequacy of his merely physiological theory to account for the existence of an immemorial and universal belief in the origin of inspired religion, traditional and revealed, and to explain away the powerful native tendency of the human mind to refer religion to an objective source.

We will not follow the essayist's illogical course in drawing universal conclusions from particular premises. There is something puerile in making Presbyterianism dependent on Calvin's abnormal liver, Lutheranism, an inspiration of Luther's sympathetic system, and Beecherism the result of a healthy viscera. The author forces us to animadvert upon his narrow material views of the nature and the functions of religion, and we feel that, like Mr. Venus in *Our Mutual Friend*, he has accustomed himself to take anatomical views of every subject. It is the misfortune of specialists that they carry their hobby into every domain of thought. Max Müller is eternally philologizing about religion. He settles a controversy by appealing to the root of a word. Our essayist pushes to extravagant conclusions his physical theory of morals. For those who believe exclusively in the subjectivity of religion his remarks may have some application; but *we* believe in the Church as a divine institution, a living and an objective creed, which does not depend upon the state of our digestion.

The essayist does not appear to be familiar with the doctrine of either the Catholic or the Protestant Church upon the subject of "special gifts" that it may please God to bestow upon his servants. He seems to assume that the wild vagaries of religious frenzy, the claim of private inspiration and of miracles are accepted by the Church and elevated to the plane of divine inspiration. Nothing can be more erroneous. The Catholic Church, which certainly holds very positive views on the continuance

among men of the miraculous and the prophetic office, has never placed the revelations of saints in the same category as the Scriptures. Prefixed to the life of every saint is a decree of Pope Urban VIII., which expressly admonishes the faithful that the miracles and other wonders related of the saint are to be accepted only upon authentic human testimony and proof, and are by no means binding upon faith. And it would be certainly an injustice to Protestantism to foist upon it the delirations of every enthusiast who felt a call to preach, or claimed to be filled with the Holy Ghost. In fact, the history of religion bears testimony to the fact that with few exceptions, these enthusiastic persons labored strenuously to promote the obvious and cardinal interests of Christianity, and that their private delusions never had much of a following. Macaulay has pointed out the superiority of the disciplinary system of the Roman Church in utilizing enthusiasm in his famous contrast of Loyola and Wesley and St. Theresa and Joanna Southcote.

But the author will not hear of inspiration in the "special and limited sense in which it is held by the schools." Inspiration is a natural function of the healthy nervous system. A healthy brain produces inspiration. So does a healthy liver and a good stomach. It is a mere question of physique! Whither would such a theory tend? Every "healthy sinner" would consider himself surcharged with divine intimations. The consequences would be more deplorable than the inane raving of a devotée or a *religieuse*. *We* strive to limit and specify

inspiration—to confine it to the Scriptures—to point out its objective fountain in an all-gracious Deity who, through the Scriptures and the Christian Church, reveals his will to man. We scout the deluded enthusiast and the dreamer as scornfully as our author does. But he goes beyond us. He wants no limitation. Every healthy lung and liver is a source of religious thought. The greater and the lesser *ganglia* are the greater and the lesser prophets. Hygeia is the true divinity; let us listen to her oracles. And as everybody believes himself in good health who has no positive pain,—and it frequently happens that those dying of consumption are really the gladdest-hearted and *subjectively* the healthiest,—where in the name of inspiration, are we to look for the divine Agency? We could dispose of the sick; but when religion appeals for its evidence to a broad chest, long-windedness, and brawny muscles, we may as well enthrone Hercules and after all win the day, for surely *he* was objective.

The most eloquent passages are those in which the writer sets forth the benefits of society, its beneficent sphere and results. But is not society an outgrowth of the religious idea? And does not modern civilization flow out of Christianity? Why, then, should we turn from its divine Author to pay our devoirs to a vague collection, a mere abstraction? Why should we love society if not for the very reason that it is the work of Jesus of Nazareth who taught us to love our neighbor as ourselves? Did the sages of Greece and Rome do this? When

Athens was afflicted with the plague, Lacedæmon rejoiced. What a contrast is the conduct of our country under a like visitation! There was not a single charitable institution in all ancient heathendom, as Niebuhr shows.

The Spencerian sociological motive sounds very benevolent, *but it will not work.* The grace and truth of Christ infused into the breast of man, taught by his Word, are worth a thousand sociologies. Lest we should seem to question the sincere and, we are sure, the tender heart of the essayist, we refrain from pointing out what he himself well knows, the failure of any merely physical or philosophical theory in the single point of natural humanity to the species. Even Christianity has repeatedly failed to soften and mollify the hearts of men; but if left to ourselves, we know how weak is any merely instinctive or intellectual motive to virtue.

We readily grant all that the writer says about the benefit of a healthy organism, steady nerves, etc.; we only deny the sweeping conclusions drawn with regard to spiritual functions, from merely physical conditions. It, no doubt, is true that our thinking is modified by our physical condition; but it is absurd to suppose that thought is the result of a modification of matter. The idea has been so often disproved that we shall not linger on it. It violates the very essence of consciousness. We might imitate the special pleading of the author in favor of healthy bodies, *ergo* healthy minds, by taking up the reverse and showing that many healthy minds

have inhabited very unhealthy bodies. But neither argument is logical or conclusive.

A word in conclusion about the *philosophy* of the essay. The apothegm from Leibnitz, "*Les corps vivant sont machines à l'Infini*," is at once the statement of the metaphysical thesis of the article and its refutation. What *is* the pre-established harmony of Leibnitz but a contradiction of the infallible testimony of our own consciousness? It goes without saying that no man but a lunatic believes that he is a sort of harmonious machine, acted upon by occasional causes, without the advertence of his intellect, or the exercise of his free will, and that, like two clocks, to use Leibnitz's figure, his soul and body keep in time, though without necessary connection or reciprocal influence. This absurdity the German philosopher had to advocate in order to save his atomic theory. To say that the *Ego*, the reason, our self, the *sensus intimus* of man, cannot distinguish infallibly its own operations, is a contradiction in terms. To represent the human mind as constantly in doubt or in error concerning its own operations is to revive Pyrrohnism. We are not so helplessly dependent upon the nerve centres as our physiological essayist insists. Leibnitz, confuting Condillac and Locke's sensism—"there is nothing in the intellect which has not been first in the senses"—added the admirable distinction—*except the intellect itself*. We are perfectly competent to form an idea of Divine inspiration without being led off by ignorance, terror or superstition. The human mind in its own sphere is infallible. There can be no de-

ception of even the external senses provided the conditions of their action are properly placed. There is nothing contradictory or absurd in the influence of the divine Mind upon the human; but we must have every proof and assurance that such an influence has been exerted ere we can pass unerring judgment upon such proof. On the whole, we submit to the reader, if the orthodox conception of inspiration and of the Divine Agency is not, to say the least, more intelligible and more explicative of the difficulties that inhere in all such subjects than theories that reject a supernatural, without clearly establishing a natural, explanation; and if it is not more rational to believe in a Creator that is above his laws, than in laws which we fancy bind the Lawgiver to Himself?

THEOLOGUS."

In the above we have a representative view of the subject from a theological standpoint. It is not our purpose to express approval or disapproval of the points the writer makes. Like the excellent critique of "Scientist," this one interests us chiefly as being of a representative character. We are content for the present to stand aside and permit the author of the essay under review, who, for the purpose of the present writing has styled himself "Radicus," to defend his position as best he can. The following is his response from

III.—THE RATIONAL POINT OF VIEW.

In defending the positions of our essay on *The*

Unity of Divine and Human Agency, we find ourselves placed in a most unenviable position, enfiladed as it is by the cross-fire of two antagonists either of whom is apparently more than our equal in polemics. We would gladly retreat and yield the points in controversy to the odds against us, could we do so with becoming grace. But since to retreat without sacrificing our colors is impossible, we shall make such defence of our essay as we are able to do with our materials and the leisure at our command.

And in the first place, let us turn our attention to "Scientist." This writer does not believe in abstractions. He resents with a spirit which would do justice to a dogmatic disputant of the Middle Ages, the attempt to introduce terms into scientific discussion expressive of states of feeling and being of which he seems to be oblivious, and which cannot be reduced to phrases of precise or definite meaning. Like the theologian, whom he would controvert, but whose style of argument he imitates, he knows too much—or thinks he does. He is certain there is nothing worth knowing beyond the confines of inductive analysis. All phenomena he would reduce to their concretes; and such as do not yield to this admirable exercise he would ignore, or deny altogether. The sublime mysteries of the Cosmos he solves with incredible agility, using for his key a term, regarding the definition of which such insignificant thinkers as Buckle, Lewes, Despine, Carpenter and Newton are at variance, namely: Law. For example, Buckle says a law of nature is a mental abstraction. Mr. Lewes says it is a result pre-

scribed by phenomena. Instead of phenomena being determined by law, the law is determined by phenomena. M. Despine's declaration that law is "*la pensée de Dieu*" is not inconsistent with either. This constant referring phenomena to "law," therefore, determines nothing, and is a puerile method of solving problems beyond our ken. One might with equal consistency refer them to a convention, or to an Œcumenical Council. Herein lies one fallacy of our reviewer. He prescribes powers to science which science at present does not possess, and sets bounds to reason which reason cannot respect. He affects as much familiarity with the course of phenomena as "Theologus" does with the mind of Zeus. We are not prepared to say that the scientific method is not competent to classify all psychological phenomena, and to show the order which underlies them. We can only affirm that it has not yet proved itself equal to that feat in psychology, the phenomena of the emotions in all their phases, not having yielded to its gentle wooing. And we are prepared to say further that, science is confined to observations of phenomena and induction based thereon. Its sphere is the demonstrable; and hence it is idle to look to science, with its present development, for a knowledge of things suprasensible. At the same time, we insist that it is unscientific and gratuitous to declare emotional phenomena unreal, imaginary, or superstitious, because they transcend the reach of our feeble conceptions, or point to the existence of powers and relations not demonstrable by optical instruments, or chemical reagents and re-

torts. One act of lifting the soul to a higher level, as in prayer, is of vastly more significance than the fall of an apple; and yet the latter revolutionized our conception of the solar system. We expect the former to revolutionize the philosophy of religion.

Science bewilders us, not only by what she reveals, but by the vastness of the possibilities which she opens to our unexpanded perceptions. Her explorations in optics, molecular physics and electro-dynamics are more marvellous than any "revelation" of gods or men. She conducts us, indeed, into the very presence of the great Unknown and Unknowable, into the very ways and thoughts, as it were, of the Infinite; and opens to the imagination a sphere of knowledge so vast as to preclude the idea of limitations. We have lately read of a mathematician feeling inclined, when contemplating the wide range of mathematical science, "to fall down with even more than reverence, before her majestic presence."* Faraday grew devout as he grew old contemplating the mysteries of another department of science—the weird transmutations of atoms and forces. Goethe's cry, "light, more light," has been regarded as significant,—as if his great mind perceived a realm of possibilities, needing only illuminating, to be revealed to his mental vision. And the great Newton likened himself to one standing on the shore of knowledge and picking up only a few grains of truth. If this sense of the vague and unfathomable comes over one, whose means

* Wm. Spottiswoode, F. R. S., *Inaugural Address* before the "British Association," Dublin, Aug., 1878.

and powers of observation are so vastly above the average, we are constrained to regard the fact as a promise that that which at present lies beyond our ken, may at some future time, with improved means and influences, and better methods of research and observation, yield up its mysteries to us. This is both the foundation of our *faith*, and our excuse for using terms in discussing the relation of the Divine and Human, which seem to "Scientist" as incongruous and misleading, and to "Theologus" as irreverent, if not sacrilegious. To the former we would say in the eloquent language of the President of the British Association, from whom we have already quoted, that "when he sees around him those whose aspirations are so fair, whose impulses are so strong, whose receptive faculties are so sensitive as to give objective reality to what is often but a reflex from themselves, or a projected image of their own experience, he will be willing to admit that there are influences which he cannot as yet either fathom or measure, but whose operation he must recognize among the facts of our existence." *

In the essay which forms the thesis of these critiques we stated as clearly as words can state, the advanced doctrine of the physiology of thinking and feeling. Without repeating here the facts in support of that doctrine, it will be sufficient to say that it is predicated on the hypothesis that all mental phenomena, the power to will, think and feel, are due to states or conditions of matter, whether

* See *Nature* for August 15, 1878, in which may be found the whole of Spottiswoode's admirable address.

of monad or man. "Theologus," we regret to say, seems not to understand our position. His interpretation of religion is widely different from our own, for he conveys the idea that it consists of forms and ceremonies—*objective* symbols; whereas our view of it comprehends states of feeling—*subjective.* He wrongly asserts that this doctrine of material dependence of states of feeling has been disproved. It is needless, perhaps, to remind so astute a dialectician as he that there is a wide difference between a proposition *dis*proved, and a proposition *not* proved; and that in the face of the facts his assertion places him in an awkward position. It is self-evident that force and matter are inseparable—molecular forces and the molecule; thinking forces and nerve substance. "Theologus" might with equal propriety attempt to lift himself out of his study window, or into his pulpit, by the straps of his boots, as to preach without brains,—though it would seem as if this feat of the miraculous were often attempted! His ministrations of love and charity may be due to the grace of God; but it is a grace of God which comes to him through the kind offices of his sympathetic ganglia. Of the truth of this proposition he may satisfy himself if he will. The investigations of Griesenger, Schroeder Vander Kolk, Charcot, Ecker, Ferrier and others, have placed this subject beyond the limits of rational controversy. And he who declares that the hypothesis has been disproved evinces a boldness out of all proportion to the character of "Theologus," and more in keeping with that of the Rev. Joseph Cook, D. D.

But "Theologus" objects to the "multiform and contradictory meanings which the writer assigns to the phrase, "Divine Inspiration." And he asserts that "it was due to the interest and gravity of the subject to give the theological definition." That may all be true from the theological point of view. But our purpose was to present the subject in its rational aspect, in the interest of truth, rather than that of dogma. It may be laid down as axiomatic that all *known* truths are susceptible of a rational interpretation. It is inconsistent with the well known order of natural phenomena—which, of course, includes psychological phenomena—to suppose that inspiration, so-called, was ever due to a different order, or process, from that existing at the present day, or that it was ever confined to the "Oracles of God" in the Scriptures. We are aware that the Christian Church holds this view, and therein she is consistent with herself. But we beg leave to observe that the principles of nature are the same yesterday as to-day; and if there is any warrant in believing that the mental processes of Isaiah were different from Paul's, or those of David different from those of Novalis, or those of either of these poets, different from those of "Theologus" or "Scientist," we frankly confess that we know not where to find it, or what it is. David's songs and St. John's visions were images projected from themselves—from the "Infinite within," though they knew it not; nor were their songs and visions less divinely inspired on that account. This interpretation of the poets' songs and the teachers' thought

accords with the physiology of mentality. Nor is it inconsistent with the teachings of the inspired Man-God, who declared that the "Kingdom of heaven is within," and that "I and my Father are one." That which is true of Jesus in this respect, is true of his human brother and sister.

Let us, then, reaffirm, but in different language, our position, *viz.:* The mental difference between man and brute, or between one man and another—between a wise man and an idiot—consists not in the favor or disfavor of the gods, in a special sense, but in the organic conformation of brain and body. Indeed, we do not object to the former mode of expressing that difference, so long as the rationale of it is kept in view; for the difference to which we refer may, and indeed, does, signify "favor" of some sort, call it by whatever name we please,—Heaven, Providence, or Environment—which, to the mind of the rational observer, are all the same. The being with a superior cerebral and ganglionic endowment is to be envied. He is an object of favor—of "divine grace"—certainly. His happy endowment is more to be prized than moneyed possessions or social preferment. He is enabled by it to appreciate his higher relations and affinities, and to apprehend with greater clearness moral ideas and relationships. Surely, no greater favor could be shown an individual than this. Men thus endowed have nobler desires, aspirations and incitements than the multitude. And we submit that the terms and phrases "Divine," "Inspired," "Holy Spirit," "Divine Afflatus," etc., are too full of significance, as expressive of states

of mind, to be thrown overboard in deference to the prejudice of too fastidious theorists. Nor is the use of them misleading to such as are alive to the devout researches of the physiologist, and recognize the fact that language at best can only symbolize thought.

Finally, both of our reviewers find fault with the manner in which we confound human agency with the Divine. And "Scientist" in particular, stretches his method and goes out of his way to point out that the miseries of life are inconsistent with the existence of a divine Paternity, possessing the attributes of omnipotence and beneficence. To which we reply:

First—That nature is a unit, and comprehends within herself the infinity of being. Man is a part of this infinity, and subject to that Power or Principle which differentiates phenomena and shapes the course and destiny of all things, in earth or heaven. To say that the creature is a part of the Creator is but affirming the unity and inseparableness of cause and sequence, of matter and mind, the truth of which is self-evident to the critical student of nature.

Such, in brief, is the purely natural, or rationalistic, view of the subject. We are aware that many who have no difficulty in swallowing the "Trinity" will *strain* at this. And yet, it has its warrant on the other, or spiritualistic side of the subject in the affirmation of many philosophers of ancient and modern times, and in that of Jesus himself. When asked by Philip to show him the

Father, Jesus expressed surprise at the strange request. "Have *I* been so long a time with you, and yet hast thou not known me, Philip? He that hath seen me hath seen the Father," etc., (John xiv., 9.)

Second—Apart from the inbred sentiment of the human heart, which recognizes the existence of a Supremacy to which it instinctively pays homage, and which is no other than the Unconscious, or that part of an individual which links him to nature—or to the Cosmos, the powers of self-preservation, of nutrition, of healing wounds and curing diseases, as well as the course of society in providing for the care of the indigent and infirm—a class produced by our barbarous economic system—the sick and afflicted, gives unmistakable evidence of a paternal Beneficence in the constitution of things, which, we affirm, is not less Divine because promoted by human hearts and administered by human hands. When we see children in distress, in a state of semi-unconsciousness, nestling confidingly in the arms of a divine beneficence, though in the form of a material mother and father, we are constrained to recognize the sublime significance of the fact, and to see in it the evidence of motherhood and fatherhood in the provision of nature. Nor need one confine his observations to children for evidence of this fact: The trust which man in extremity reposes in a divine Supremacy, call it by whatsoever name one may, is a phenomenon of daily occurrence, the significance of which it were idle to ignore, or to close one's mind against. Moreover, human paternity is typical of Divine paternity, human love, of Di-

vine love. This conclusion follows legitimately from our premise, namely: the substantial identity of the two.

It is not for us to find fault with Providence for the existence of misery and suffering. We know that suffering is incident to the present conditions of the physical and social environment, and that it is inseparable from the existence, perpetuity, and government of the world, since it is through suffering that thought is stimulated, evils unveiled, and justice established. There could be no happiness, no uplifting of the creature, without suffering. But why a different order of things, in which justice and right-doing should bear rule, was not inaugurated at the beginning, is no business of ours, nor of "Scientist's." We are in duty bound to accept the course of things as the wisest possible under the circumstances. And whether or not the existence of this marvellous course and nature of things, this stupendous Cosmos, betokens Omnipotent power and Supreme Beneficence are questions the solution of which we are content to leave to the awakening intelligence. For ourselves, we can but wonder at the power displayed by the Stellar system. The Beneficence which enfolds the whole is of such vast proportions as to utterly bewilder the finite mind. All nature seems to us a marvellous manifestation of Divine Love and Power.

The line from the philosophical writings of Leibnitz, which we quote and place among the apothegms of the essay under criticism, namely, "Les corps vivants sont machines á l'Infini," "is at once

the statement of the metaphysical thesis of the article and its refutation" says "Theologus." He is right in the first part of the sentence but wrong in the second part. It is true that Leibnitz recognized the existence of a duality in nature, that is, of matter and force, conformable to the evidence of the senses; but he insisted that in the union of the two was to be found the incarnation of divinity. The monad for example, was matter quickened by the divine Spirit, and when so quickened, constituted, so to speak, a working point of Divine energy. It then became a part of Himself and formed, at the same time, a part of the machinery by which the universe is carried on. The higher the grade of organic forms, the more typical and representative they are of the divine Essence and the more important is their function in the world's mechanism, of which God is the centre and moving cause. This conception is not at all inconsistent with the view of the author of "Divine and Human agency." Nor is it inconsistent with the view of the writer of the book of Genesis, wherein he says: "God created Man in his own image." The observation of Jesus, which has been so grossly misunderstood, namely, that "I and my Father are one," is in perfect accord with it. According to Leibnitz, man in the unit is a spark of divinity; in the aggregate, he comprehends the Infinite, the laws of which constitute the Supreme Will.* We do not see how the philosophical observer could accept any narrower

* *Vide* Leibnitz's *Considerations sur la doctrine d'un esprit Universal.*

conception of the divine Existence, if He is to be given any place at all in the heart and brain of Humanity.

We can have no controversy with "Theologus" in regard to the humanity of the religion of Jesus. While it is divine, it is also human. In it the excellences of human character are idealized and dignified with the appellation, divine. It is bad form, however, to make invidious comparisons between Christianity and other religious systems, as does our learned critic. For an example, he refers to the absence of charitable institutions in early heathendom as if the fact were something to the discredit of the latter. We would remind "Theologus" that the absence of jails and penitentiaries was equally noteworthy among the Pagans. Let us not be deceived by appearances. The reflective observer cannot be oblivious to the fact that the poorhouse, jail and penitentiary indicate the reign of injustice, and that they are a disgrace, rather than a credit, to any civilization in which their existence is a necessity.

We refrain from making further defence against the attack and criticisms of "Theologus," for the reason that his premise and ours are so wide apart as to render controversy between us unprofitable. His defence of Christianity was not called for, since it was not attacked. His "special pleading" in behalf of the merits of his Church may likewise be allowed to pass unchallenged. But we cannot forbear to remark that, should the excellent Ptolemy rise from the dead and attempt to rehabilitate his

system of astronomy, the reflective reader could not be more surprised than he will be at the effort of "Theologus" to resuscitate that system of theosophy which, thanks to the progress of rational ideas, has become wellnigh obsolete in the thought of the world's greatest thinkers. Nor will his habit of confounding truth with dogma excite less amazement.

RADICUS.

EPILOGUE.

THE SCOPE OF INDUCTIVE PHILOSOPHY.

"The highest of our so-called laws of Nature are as yet purely physical." * * * "Not one single physical discovery that has ever been made has been connected with the laws of the mind that made it; and until that connection is ascertained, our knowledge has no sure basis."—*Buckle.*

EPILOGUE.

THE SCOPE OF INDUCTIVE PHILOSOPHY.

THAT incomparable thinker, the late Auguste Comte, in his great work on the positive method in philosophy, divides the mental development of mankind into three great theoretical eras or stages, *viz.*: "The Theological, or fictitious; the Metaphysical, or abstract; the Scientific or positive." * Without stopping to inquire as to the justness of this classification, it must be admitted by the attentive observer of passing events, that the first, or theological stage has long since been passed; the second, or metaphysical, is gradually losing its hold on the public mind; and that the third, or scientific stage, is in course of active development.

The tendency of modern thought points unmistakably to this conclusion. It is, indeed, a matter bordering on the marvellous to the uninitiated in scientific subjects to note the progress of scientific discovery within the last half century. In fact, it is

* *Positive Philosophy*, English Tr., p. 25.

not necessary to go back so far for evidence of the marvellous in this direction, the present generation being one of the most remarkable eras in the progress of science that the world has seen. Sciences are indeed multiplying, under the strong impetus of mental development, like the creeds of Christendom, despite the counterweights of theologians, or the protest and admonition of those to whose special keeping the moral progress of man has hitherto been exclusively committed. Scarcely a year passes into history that does not witness the advent of some new science; while almost every day marks the advent of some new discovery, and makes important additions to the long catalogue of that which has gone before. Everything is being reduced to definite terms and precise formulas. While but a few years since science was confined to studies of so-called material subjects and methods, dealing at most with the laws of physics and mathematics, now the laws of the mental and psychical are being reduced by it to definite apprehension; and phenomena which were hitherto regarded obscure and irregular submit to prophecy and classification. Within the memory of our youngest reader, history has been added to the list of sciences; and in the same category must also be included moral science, the sciences of art and letters, business, politics, economics, society, etc.; and instead of having, as many seem disposed to believe, a religion of science, we now have a science of religion.

It is indeed difficult to determine the magnitude of this tendency. Formerly, but a few despised,

self-sacrificing souls were occupied in the vineyard of science, but now that study is confined to no particular class of minds or department of study. Having become popular, the ranks of scientific discovery are made up of no exclusive sect or caste, political or religious, but embrace those of every shade of religious belief and of intellectual bias—the heretic and the religious devotée, uniting to give impetus to a tendency which seems as imperative as fate, and as inevitable as the annual unfolding of the foliage and flowers, or the daily ebb and flow of the tides. If this tendency means anything, it is that man has caught the spirit of the century, and is being quickened by it to nobler aims and deeds. Philosophy has become a part of his daily regimen; and if the flesh of lions made a Hercules, why should not a diet of philosophy produce philosophers?

However gratifying all this may be to the student of rational philosophy, one is led to inquire if there be no danger in an excess of this tendency? Having passed the Scylla of theology, is there no danger to be apprehended from the Charybdis of science? The sea of physical discovery is undoubtedly an open one, of vast dimensions and of illimitable extent; and although there be no rocks nor shoals to encounter, nor storms, nor monsoons to apprehend and guard against, there is danger of being lost in its boundless spaces, and of missing the chief object of one's search—Eternal Truth.

He who has watched with becoming diligence, the progress of physical inquiry, cannot have failed

to remark the confidence with which the scientist asserts his belief in the absolute character of scientific induction. He becomes a part of his method; and if he does not dogmatize, it is because he deals with subjects about which it were impossible to dogmatize. He, nevertheless, does something but slightly removed from the dogmatic, that of declining to entertain propositions not clearly demonstrable or justified by facts. In avoiding credulity he runs into scepticism. Having a plethora of facts, he has no place for fancies. The intuitional faculty in him is ignored; its powers diverted to the uses of observation and analysis. Seeing is of far more importance, in his estimation, than perceiving; and the external sight is continually augmented at the expense of the internal. This peculiar mental bias, we repeat, is characteristic of the inductive observer, and has advantages and disadvantages peculiar to itself.

It is too much to expect that any exclusive method of observation should not have its defects and shortcomings. It could not be otherwise from the very nature of observation, and the profound obscurity in which most of nature's processes are involved. And while we are free to admit that the inductive method of observation is more reliable, has fewer defects, when exclusively adhered to, than the deductive, yet those of the former are often so pronounced and egregious that we cannot forbear to give them a passing notice.

There is, undeniably, much to praise and but little to censure in the *spirit* of scientific research.

Professor Tyndall, in his second lecture on light, observes that science will never rest satisfied until it has probed the root of a subject. Nothing surely can be more praiseworthy than the exercise of such a spirit. It is the spirit that must animate and quicken every earnest truth-seeker in any department of human knowledge. And although the precise object of his search be never gained, he will not fail of the priceless reward which comes to him who is actuated by a purpose thus noble and exalted.*

But is not the attempt to probe the root of any subject a vain and idle one? Is it not repeating the folly of the fabled tower builders over again? Surely, he who follows the inductive method in philosophy, unaided by mental illumination, can never hope to attain success in that direction, whether the subject be the familiar one of physics, or the more obscure and higher one of mind. He may, it is true, be able to trace a long series of connected sequences and co-existences, but each one of them will in turn be secondary to that for which he seeks; and the very root of all, the invisible, but eternally operating Presence, will forever elude his sight. Can one by searching find out God? Can the finite rise to the Infinite?

The object of science, says Mr. Lewes, "is to

* It was Lessing who said, "If the Almighty, holding in one hand truth and in the other search after truth, presented them to me and asked me which I would choose, with all humility, but without hesitation, I should say, Give me search after truth."

detect the general order of Things as manifested in particular groups of phenomena; *i. e.*, the abstract laws of Being under particular conditions. It is not moving bodies in all their complex relations, but laws of motion; not living organisms, but laws of Life; not thinking organisms, but laws of Mind;—it is these which are the objects of science; and the particular substances, plants and animals which manifest such laws, are used only as stepping-stones to reach those higher points of view." *

In regard to the object of science Despine is equally lucid: "La science humaine," he writes, "étant formée par la connaissance des êtres crées et des lois qui les régissant, représente donc la pensée de Dieu découvrte par l'homme an moyen de l'observation et du raisonnement."†

If any there be who feel disposed to doubt the truth of the foregoing, a moment's reflection upon the aim and scope of inductive science will suffice to satisfy them that it is not ill founded. That method does not aspire to the realm of final causes. Its legitimate primacy is with the objective and phenomenal exclusively. "The inductive philosopher," says Mr. Buckle, "collects phenomena either by observation or by experiment, and from them rises to the general principle or law which covers them."‡ He cannot go behind phenomena; he does not contemplate the discovery of the ultimate

* *Problems of Life and Mind*, Vol. I., p. 60.

† *Psychologie Naturelle*, Tome I., p. v., Introd.

‡ *An Essay on the Influence of Women on the Progress of Knowledge.*

and transcendental. The purpose of his inquiry is satisfied with sequences and the law, or order in which they invariably come. The bare idea of a ghost provokes contempt; and of the supernatural and the miraculous he has as much horror as nature is said to have of a vacuum. In general he disbelieves in spirit, as distinct from forces peculiar to matter, and regards the existence of a soul apart from the body as a hypothesis wholly untenable.

The late Herr Strauss, though a theologian, was a typical representative of this class of scientists. He saw no logical necessity for a soul in a human body; and he was bold enough to assert that "many of the difficulties environing the problem of thought and feeling in man entirely proceed from this assumption of a psychical essence distinct from the corporal organs. How from an extended, non-thinking thing, such as the human body, impressions can be conveyed to a non-extended, thinking thing, such as the soul is alleged to be; how impulses are re-transmitted from the second to the first; in short, how any communion is possible between them—this no philosophy has yet explained, and none ever will. The matter must," continues he, "in any case, be much more intelligible, if we have only to do with one and the same being, of which in one respect extension is predicable, in another, thought. Of course we shall be told such a being is not possible. We reply, It exists: we ourselves are all such beings." * Holding thus ever

* *The Old Faith and the New*, Eng. Tr., Vol. ii., p. 17.

to the sensible and objective: clinging always to the clearly demonstrable on this side of nature, the sphere of inductive philosophy ranges all the way from the minute molecule of the material world up to the highest evolution in nature—the human mind.

We would not be understood as committing the great body of scientists to the cold logic of a class of inductive thinkers, of which we have mentioned the eminent Strauss as a type. There is a large class, steadily augmenting in numbers, who profess loyalty to the scientific method, but who endeavor to reconcile the teachings of science with certain transcendental doctrines. Professor Le Conte may, perhaps, be taken as a representative of this class. In his interesting book, entitled *Science and Religion*, the scope and bearings of science are stated with much force and clearness, if not with philosophical precision. He says:

"Science knows nothing of phenomena which do not take place by secondary causes and processes." [Are there any phenomena, we are tempted to ask, that do not take place by secondary causes?] "She does not deny such occurrences," continues the Professor, "for true science is not dogmatic; and she knows full well that tracing up phenomena from cause to cause we must reach somewhere the more direct agency of a First Cause. But any phenomena referred to direct agency of the First Cause is immediately put beyond the domain of science. The domain of science . . . is all that lies between the phenomena, the objects of *Sense*, and the First Cause, the object of *Faith*. Science passes from

sensible phenomena to immediate causes; from these to other higher causes; and thus by a continuous chain she rises higher, and still higher, until she approaches the Great First Cause, until she stands before the very throne of God himself.*

If Prof. Le Conte be right in the main, which we are not disposed to question, he lays himself open to the charge of falling into an error very common to the scientific mind—that of placing the Creator, when He is allowed any place at all in phenomena, at the end of an endless chain of causation! Surely, the worshippers of the First Cause, if He really be thus remote, have a God as distant from them as have those who deify and worship the sun and stars; and an eminent astronomer has calculated that a prayer ascending Deity-ward at the rapid speed of a bullet from an Armstrong gun, which is considerably faster than the velocity of sound, would take thirteen years to reach the nearest of those deities—the sun! This may be said to be passing from the sublime to the ridiculous; but if it serve to awaken the mind to the impolicy of divorcing Divinity from phenomena, of separating the finite from the Infinite, it will not be wholly inexcusable, nor profitless. Let us assume at once a conclusion forever unattainable by inductive science, but which is fully warranted by the deductive method, namely: that Divinity is in the atom no less than in the planet; in the flowers and fruits as well as in animals and man: that in truth

"He lives through all life and extends through all extent";

* Pp. 22-23.

is represented in the last sequence as well as in the first and intermediate; in the end no less than in the beginning. The conception of an endless chain of causation, which one hears so much about, beginning with the Creator and ending with the creation, though by no means a mythical idea, is yet liable to mislead. It has a basis of fact which observation is competent to verify, but at the same time it is phenomenal, not absolute. It can at most only suggest the existence of a determinate principle in the universe, pervading all, and moulding shapeless form into definite being. It gives us the order by which evolution is effected, but does not lift the veil which conceals the nature of the things evolved; nor could it do so were it several times longer than its present marvellous length. The means of bridging the chasm which separates the cause from the effect, the Creator from creation, are, perhaps, beyond finite reach. Surely the endless chain of causation is inadequate for the purpose; and inductive philosophy is powerless to furnish any other or different means. If, therefore, that feat of mind be ever effected, it is obvious that we shall be compelled to call to our aid a very different method of observation—a method which begins at the other end of the Cosmos, so to speak; that assumes at the outset the immanence of mind as the fundamental agency in evolution. And since assumption is the basis of all philosophy, we respectfully submit that that method which assumes mind as its fundamental postulate is certainly not less rational than that which assumes matter for it, since

it is obvious that we know as little of the latter as we do of the former. Far better is it to accept the Leibnitzian idea of the immanence of God in everything.

The deductive method of observation is thus seen to be quite the reverse of that of the inductive, which has achieved such remarkable triumphs in the domain of physical science. It is losing caste, however, in the popular mind in proportion as its twin sister and rival is gaining in popular favor. The deductive begins with the Creator and descends to the creation. Having assumed the existence of mind, it is able to prove the existence of its correlative-matter. "The deductive philosopher," says Buckle, "draws the principle from ideas already existing in his mind, and explains the phenomena by descending on them, instead of rising from them."* He reasons from within outward, or from above downward. By his method, he is able to comprehend the sensuous, as well as the supersensuous, while that of its powerful rival, the inductive, is unequal to grasp the internal—spiritual. Why there should not be perfect reciprocity of powers and possibilities between the two methods of research we shall not now stop to inquire. We only know that it does not exist.

The necessity of carrying our reasonings behind the purely objective, if we would reach the source of things, must be apparent to every reflecting mind. No philosophy of nature, of life, and of

* *Influence of Women on the Progress of Knowledge.*

mind, is complete that does not contain within itself the means of revealing the spirit, as well as the substance of things, or that does not recognize their identity. The two methods should aid and supplement each other. Referring to the irrational, not to say unnatural, antagonism, between materialism and idealism, Strauss observes that they endeavor "to construct the universe and life from the same block. In this endeavor one theory starts from above, the other from below; the latter constructs the universe from atoms and atomic forces, the former from ideas and idealistic forces. But if they would fulfil their tasks," continues the author, "the one must lead from its heights down to the very lowest circles of nature, and to this end place itself under the control of careful observation; while the other must take into account the higher intellectual and ethical problems." *

This is well said. The inquisitive mind is not satisfied with terms that, at best, express only sequences, as correlation, evolution, conservation, etc.; *but it must know what it is that is correlated, evolved, etc.* However interesting it is to know the means, the law, the order of progressive changes in nature, it is still more interesting *to know what it is that undergoes these processes, these changes.* We insist that it is the individual, himself: the transcendentalist believes that it is spirit, an entity, moving and moulding in accordance with its own eternal law. And what is spirit? The late M. Papillon, in his

* *The Old Faith and the New*, Vol. II., pp. 19, 20.

"Constitution of Matter," has well said that spirit "is the law of substance; it is not force, but it is the revealer of force; it is not life, but it makes life exist; it is not thought, but it is the consciousness of thought. . . . In a word, it is not reality, but yet in it and by it realities are defined and differentiated, and consequently exist." This is only saying that spirit is the real source and collocation of things, and living forms its differentiation in nature. This definition of that which is necessarily transcendental, is as comprehensive as the nature and present apprehension of the subject admit of. Of its existence every conscious mind is assured, and it can well afford to wait its own unfolding for a fuller and more precise conception of it.

If, therefore, the sphere of inductive science be limited to the confines of the purely objective world, it is impossible to be insensible to its atheistical tendency, particularly if its inductions are to be taken in their literal signification and accepted as ultimate and final. Dealing exclusively with the objective—with phenomena, and the relations between them—it is impossible for the consistent devotée of that method to rise to the conception of anything above atoms and forces, acids and alkalies, oxides and salts, organs and functions, and their correlative combinations and relations. "Whatever lies beyond these," says he, "are proper objects of faith." It is a confession deeply humiliating to the vanity of a pure scientist, and indicates a degree of candor characteristic of his class. Nothing can be

truer. Faith *is* a refuge for thousands, who cultivate science in the full assurance that it is the Alpha and the Omega of all knowledge of natural things, but who find in the so-called supernatural an escape from the consequences of a logic which sinks their hopes in the endless rounds of material processes and forces. This fact, to our mind, is one of the strongest proofs of the defects and shortcomings of science and of the popular method of interpreting the facts and phenomena of nature.

Is there no remedy for this unhappy state of things? We believe there is. Through the union of the two methods of observation, to which we have referred, there shall ultimately arise a philosophy of nature broad enough to embrace the all of human life and of human destiny. We hold with Mr. G. H. Lewes that "there is no logical contradiction in the existence of a spiritual world in all its features entirely unlike the sensible world. We cannot say that such a world is impossible; we can only say that, if it exist, it is to us inaccessible, because to become accessible it must pass into the sphere of the sensible, and in its passage will cease to be suprasensible." * This is self-evident.

Let us briefly examine, at the risk of repetition, a few of the more striking demonstrations of science, with the view of ascertaining how far our conclusion, relative to its defects and logical tendency, is justified by facts.

And first as to the nature and phenomena of

* *Problems of Life and Mind*, Vol. I., p. 248.

light. The definitive conclusion of this subject presents many features which illustrate in a forcible manner the incomplete and unsatisfactory character of inductive research, and the necessity of reading between the lines, so to speak, if one would not be misled by it. The unsophisticated in matters scientific believes light to be a luminous element emitted by the sun, and by means of which he is enabled to see material objects. To such an one, the sun appears to shine, to illuminate all nature, to give light and life, where in its absence is darkness and death. Hence, "sunshine" is the common appellation of the unlettered to designate the phenomenon of illumination.

Ascending to the conceptions of the more intelligent mind, unbiassed by hypotheses and mathematical, or metaphysical abstractions, the phenomenon of light, though considerably augmented, does not essentially differ from this. Thus says the eminent astronomer and physicist, the late Sir David Brewster: "Light is an emanation, a something which proceeds from bodies, and by means of which we are enabled to see them." * And elsewhere, in giving expression to a higher conception of the nature and influence of that mysterious element, he observes: "Light is the very life-blood of nature, without which every material thing would fade and perish; the fountain of all our knowledge of the external universe; and the historiographer of the visible creation. . . ." The vast majority of eminent physi-

* *Treatise on Optics.*

cists, from Empedocles, of the Greeks, to Newton, of modern times, entertained a similar opinion. Newton, indeed, bravely died believing that the sun did really shine, emitted luminous particles into space, which, although imponderable, were by no means devoid of a tangible reality.

It is interesting to note the opinions of the ancient philosophers respecting the nature of light and the laws of sight. Epicurus, a prince of the materialists, supposed that sight was caused by the reflection of little images into the visual organ, and by the giving out of certain rays which strike the object and return again to the eye. Democritus was of the same opinion. Hipparchus, likewise, held similar notions of the manner of vision. He held that these rays of vision which went out and encircled the superfices of bodies, produced the same feeling on the beholder as that of touch when the hands laid hold of an object. Thus, *seeing* was but another form of *feeling*. Pythagoras seems to have held a similar doctrine. And even the divine Plato, as Plutarch calls him, held views of light and sight analagous to those of Hipparchus.*

Passing over Newton's emission hypothesis of light as irrelevant to our purpose, we have to notice that which, although advanced by that eminent mathematician, Professor Huyghens, in Newton's time, was not received with much favor until within the last century. It was left to that unequalled and indefatigable mathematician, Doctor Thomas

* *Vide Plutarch's Morals*, Vol. III., p. 168.

Young, to upset all previous doctrines concerning the scientific nature of light, and to establish, on data, which is said to be indisputable, the wave, or undulating hypothesis. According to this hypothesis, which Professor Tyndall declares is no longer a hypothesis, but a fixed fact—a demonstration—light consists of the vibrations of an exceedingly thin, elastic ether—an hypothetical ether—which fills all space, and even the interstices between the molecules of all material bodies. These infinitesimal light-waves are analogous to the air-waves, by which sound is produced, or more palpably still, to those of water when a stone or other body is thrown into it. These light-waves were accurately measured and counted by Professor Young, who found them so diminutive that hundreds of millions occupy only an inch of space, and a second of time! Moreover, each element of the solar ray, it is alleged, has vibrations of a length and frequency peculiar to it, which constitutes the tint by which it is known and distinguished.

Thus, we see that all the beautiful and sublime phenomena of light are reduced by scientific demonstration to the mere vibrations of an imponderable ether—an hypothetical one at that! Light a kind of force—sun-force! That is the conclusion reached by the last scientific analysis of the problem. And nothing in the wide domain of physics is more remarkable than the unanimity with which this scientific solution of the subject is viewed by scientists. Many who accept the undulating doctrine as a scientific fact, strangely deny it as a

physical truth. Professor Brewster, whom we have already quoted, says that "the theory of undulations has made great progress in modern times, and as a mathematical one, deriving principal support from an extensive class of phenomena, it has been viewed by many of our most distinguished philosophers, and adopted even by *those who do not admit it as a physical truth.*"*

There is such a fascination in the demonstrable that the scientist apparently forgets the objective character of his observations and continually mistakes sequences for causes. He registers an effect and forthwith proclaims the discovery of an entity. Exceptions to this statement, however, must be noted. Professor Cooke, in his fine work on chemistry, declines to place himself in full accord with the doctrine so highly eulogized and warmly accepted by Professor Tyndall and other eminent savants. He "cannot agree with those who regard the wave theory of light as an established principle of science. That it is a theory," he says, "of the very highest value, I freely admit, and that it has been able to predict the phases of unknown phenomena, which experiment has subsequently brought to light, is a well-known fact." † And he goes on to detail reasons in connection with the ether-hypothesis, to show the improbable—not to say untenable—character of its existence. Nevertheless, a fact is a fact, and a demonstration something too palpable to be assailed by argument. So he finally concludes

* *Treatise on Optics*, p. 164. The italics are ours.

† *The New Chemistry*, p. 22.

that whether "there are such things as waves of ether or not, there is something concerned in the phenomena of light which has definite dimensions, [and] that have been measured with as much accuracy as the dimensions of astronomy, although they are at the opposite extreme of the scale of magnitude."* Of the truth of that, there is, of course, not the shadow of a doubt.

Among the few who decline to recognize the unqualified validity of the undulating hypothesis of light, there are none who have assailed it with such effect as the late M. Comte. With that masterly insight into the causes of phenomena which characterized that great thinker, M. Comte attacked the hypothesis from its most vulnerable—rather let me say—its only assailable point, namely: the subjective, or physiological. "If the doctrine of undulation means anything," observes he, "it must mean that the phenomena of light and sound are alike in their vibratory agitation. . . . Notwithstanding all arbitrary suppositions, the phenomena of light will always constitute a category *sui generis*, necessarily irreducible to any other; a light will be forever heterogeneous to a motion or a sound." Then, in the same masterly way, he goes on to say, that "physiological considerations discredit this confusion of ideas, by the characteristics which distinguish the sense of sight from those of hearing, and of touch or pressure from those of smell. If we could abolish such distinctions as these by gratuitous

* *The New Chemistry*, pp. 23, 24.

hypotheses, there is no saying where we should stop in our wanderings. A chemical philosopher might make a type of the senses of taste and smell, and proceed to explain colors and tones by likening them to flowers and scents. It does not require a wilder imagination to do this than to issue as a supposition, now become classical, that sounds and colors are radically alike! It is much better to leave such a pursuit of scientific unity, and to admit that the categories of heterogeneous phenomena are more numerous than a vicious, systematizing tendency would suppose." *

It is interesting to observe that this prince of the positive school of philosophy was the first among scientists to recognize the truth of the trite saying of that great deductive philosopher, that incomparable Man of Galilee, namely, that "The light of the body is the eye." † The luminous impulses of the solar ray may be what they may; mathematics may measure and count their number in a given space and time; or resolve them into one form or another; but, nevertheless, the fact remains that without the co-ordinating powers of the optic ganglion—the *corpus quadrigemina*—not only would the

* *Positive Philosophy*, pp. 232, 233.

† We are not unmindful that Christ used this expression in a moral, rather than a physical sense. The sentence, however, is too full of meaning, in the connection in which it occurs in the text, to be wholly out of place. The following is the whole verse:

"The light of the body is the eye: if, therefore, thine eye be single, thy whole body shall be full of light." Matt. vi., 22.

body be devoid of light, but the universe itself would be reduced to impenetrable darkness. Nay, more than this, the *idea* of light could not exist.

The late Professor Draper, likewise, gave but a negative assent to the doctrine of undulation. He finds too many physiological properties in the solar ray to justify him in attributing all of them to the agency of mere motion. "The theory," says he "like the theory of universal gravitation, possesses abundant internal [external] evidence of truth. In our times extensive and important applications have been made of it, so that it now includes an explanation of all the phenomena of reflection, refraction, polarization, double refraction, interference. As yet, [however,] it has furnished no clear account of the phenomena of absorption, the *very phenomena which are at the basis of all physiological and chemical facts in their relations to luminous agency.* . . . Nor are there yet included in it any representation of the various phenomena of heat." * And the distinguished Professor proceeds to point out that, aside from the phenomena of absorption, there are phenomena concerned in the production of tints not fully covered by the degree of refrangibility and the wave-length. Moreover, he says, "there are facts connected with the history of light which seem to prove that beyond this there are peculiarities which are more profound." † The chief of these facts, we may remark, is that discovered by Sir David Brewster, namely: that different kinds of light—the

* *Chemistry of Plants*, p. 67. New York, 1844.

† *Idem.*, p. 85.

various elements of the solar ray—can be insulated in various parts of the spectrum; "that red light exists in the violet spaces, and blue light in the red."

Dr. Draper's researches relative to the physiological and chemical influences of light take high rank; and the world is especially indebted to him for valuable contributions to these departments of physical knowledge. His views in this connection, therefore, are all the more weighty. But more of this subject anon.

The more recent discovery in physics, the correlation and indestructibility of Force, is a part of the same great subject, and very forcibly illustrates the tendency of modern science, especially when its discoveries are literally interpreted. It is not too much to say that the discovery of the mutual convertibility of the physical forces is an achievement which remains unparalleled in the annals of modern science. It is unquestionably the grandest of all the feats that science has yet accomplished. The late Professor Faraday declared it to be the greatest triumph of physical science of modern times.* And no man was ever better qualified than he to pronounce judgment upon the grandeur of the discovery; no man was better able to see its full force and meaning. The indestructibility of matter was long since demonstrated; the equally indestructible char-

* The precise words of the Professor are: "The highest law in physical science which our faculties permit us to perceive—the conservation of force."

acter of force remained for Professor Grove to demonstrate within the last three decades.

What does the discovery mean? The correlation of force originally meant that light, heat, actinism, and electricity, etc., were forms of one and the same force. Beginning with light, or sun-force, the other physical forces are but modified forms of light. Light is the queen of them all, for it comprehends them all. From light come all the others. All the other forces are not only mutually convertible, but may also be re-converted into light. In more recent times the meaning of this great discovery has been much extended. It has come to mean that physical and psychical forces are convertible. The English barrister built better than he knew.* Instead of his grand idea being confined to matter, it has been legitimately extended to mind. The law

* Professor Grove's own statement of the law of correlation of force is as follows:

"The position which I seek to establish in this essay is that the various affections of matter which constitute the main objects of experimental physics, *viz.*: heat, light, electricity, magnetism, chemical affinity, and motion, are all correlative, or have a reciprocal dependence; that neither taken abstractedly can be said to be the essential cause of the others, but that either may produce or be converted into any of the others; thus heat may mediately or immediately produce electricity, electricity may produce heat; and so of the rest, each merging itself as the force it produces becomes developed; and that the same must hold good of other forces, it being an irresistible influence from observed phenomena that a force cannot originate otherwise than by devolution from some pre-existing force or forces." —*The Correlation of Physical Forces*, p. 19, Int'd.

has widened the sphere of its operation until it has embraced first, the physical forces, and last, the mental and social forces. The mutual convertibility of sun-force and mind-force! Light becoming mind, and mind falling back again to light!

There are those who refuse to entertain the proposition to this extent. But viewed from the scientific peak of observation, this wide application of the law is as demonstrable as the simplest problem in physics. It certainly has no limit on the material plane. Light is the basis of affinity in the atoms; light produces actinism in the leaf and circulates the sap in the stem; light organizes the organic compounds and proximate principles; light carries those compounds up to higher forms, and imbues them with higher life; light carries them up still higher, and transforms them into mind. If the doctrine of correlation of force means anything, it means this. Thus says the lucid writer of the Introduction to Professor Grove's fine essay, referred to:

"The intellectual operations are also directly correlated into physical activities. As in the inorganic world we know nothing of forces except as exhibited by matter, so in the higher intellectual realm we know nothing of mind-force, except through its material changes in the nervous system; and it may now be regarded as a fundamental physiological principle, that 'no idea or feeling can arise, *save as the result* of some physical force expended in producing it.'"*

* Professor Youmans. The italics are ours.

We confess there are many facts which support these extreme views of correlation. Dr. Brown-Sequard says that the transformation of nervous into motor force, "takes place at every moment of our lives." He is inclined to believe that light may be correlated directly into nervous force, although "it is not distinctly proven yet." There is, on the other hand, no doubt in his mind, that nervous force may be correlated into light. "There are animals," says this distinguished physiologist, "which are phosphorescent, and which are so under an act of their wills, and, so far as we can judge, under the influence of their nervous system; so that light, also, can be evolved as a transformation of nervous force. There are cases of consumption in which light has come from the lungs. . . . The light appears not only at the head of the patient, but it may radiate from him into the room."* Hence the aureola which has been represented as sometimes surrounding the head of saints, may have something more than a mythical basis after all. But the induction of the physiologist robs it of its supernatural character and its especial glory, when he proves that it is an abnormal transformation of nervous force into common light! Is this another scientific fact devoid of any basis of physical truth?

Mr Herbert Spencer makes a still wider application of the law of correlation and conservation of force than this. He extends it to the phenomena

* *The Nervous Force*, a Lecture at the Lowell Institute, Boston Mass., Feb. 25, 1874.

of society—to social forces: "Now that the transformation and equivalence of forces," says he, "are seen by men of science to hold not only throughout all inorganic actions, but throughout all organic actions; now that even mental changes are recognized as the correlatives of central changes, which also conform to this; and now that there must be admitted the corollary that all actions going on in a society are measured by certain antecedent energies which disappear in effecting them, while they themselves become actual or potential energies from which subsequent actions arise; it is strange that there should not have arisen the consciousness that these highest phenomena are to be studied, not, of course, after the same physical methods, but in pursuance of the same principles. And yet scientific men rarely display such a consciousness."* These views of Mr. Spencer are simply a logical extension of the vast doctrine of the correlation of force; and if the complaint he makes, relative to the neglect of them by men of science, be just, it is through no fault of their philosophy; it is rather the want of mental acumen to grasp the stupendous reach of the law.

The doctrine of force-correlation, therefore, is capable of indefinable extension. It is not confined to the molecule, or any form, or condition of matter, or mode, or manifestation of mind. It reaches man and mankind; the individual and the species; physiological transformations, and civil and political evo-

* *The Study of Sociology.*

lutions. The law reaches the highest and the lowest plane of sublunary phenomena. On the physical plane its operation may be easily traced from step to step through all the intermediate gradations in the inorganic and organic scales—from phenomena the most simple to phenomena the most complex. Already it has been applied to the sciences and arts of industrial life; to determine, for example, the relative value of the food we eat and the beverages which many are disposed to drink. A recent treatise of food and diet* makes use of the law to determine the nutritial value of the various varieties of food which civilized people commonly use. According to this test, we have only to burn an aliment and measure the products of combustion—especially the amount of heat given off—to determine its scientific value in the economy. This is reducing the complex subject of the best food for everybody, to definite limits—to an exact formula. That aliment is the best food which contains the most heat-producing power. The problem is one of oxidation, and requires for its solution only a few appropriate chemical apparatus. Burn the articles to be tested, and the one that yields the largest amount of heat-force—that raises a given quantity of water to the greatest number of degrees of heat—is rated the most nutritious. So at least we infer from Professor Frankland's tables.†

* *Foods*, Ed. Smith, M. D., F. R. S., New York, 1873.

† This table of Professor Frankland showing the comparative force-forming value of certain alimentary substances will amply illustrate the meaning of the text:

"Thus we prove," says Dr. Edward Smith, "that an ounce of fresh lean meat, if entirely burnt in the body, would produce heat sufficient to raise about 70 lbs. of water 1 degree Fah., or a gallon of water about 7 deg. Fah. In like manner, an ounce of fresh butter would produce ten times that amount of heat; but it must be added, that as the combustion which is effected within the body is not always complete, the actual effect is less than that now indicated."—*Foods*, pp. 5-6.

To the uninitiated in chemical formulas such a conclusion of such a subject seems impious absurdity, as it ignores endless properties and qualities in food which can only be appreciated and made known to us upon their digestion and assimilation—transformation when, in short, they become a part of us—our personality. It is, however, a conclusion in strict accord with the scientific method, and is fully justified by scientific data. Its barrenness is sufficiently obvious; and we dismiss the subject from further consideration in this place with the observation that there is something more profound in the problem of human nutrition than science has yet discovered.

We see, therefore, how purely objective are the

Foods	In combustion raises lbs. of water one degree Fah.	Which is equal to lifting lbs. one foot high.
10 grains of dry flesh	13. 12	10. 128
10 " " albumen	12. 85	9. 920
10 " " lump sugar	8. 61	6. 647
10 " " arrow root	10. 06	7. 776
10 " " butter	18. 68	14. 421
10 " " beef fat	20. 91	16. 142

demonstrations of science in respect of the doctrine of the correlation and conservation of force. It certainly needs a great deal of faith-force to enable the average mortal to withstand the conclusion to which it logically tends. In the endless rounds of activities nothing is gained, and, therefore, nothing is lost; nothing is created, and, therefore, nothing is destroyed. The same matter is in all forms; some form of the same force pervades all combinations. Variety in matter is only modifications of the same principle. Force is the active agent; matter is the passive media. Throughout the material transformations and metamorphoses which take place in nature's vast laboratory, some form or modification of the same force is eternally present; sometimes it is in one form, and sometimes in another; sometimes actual; at others potential; now a maximum in this direction; then a minimum in that; at one time as heat; at another as light; here as nervous or mental force; there electrical or magnetic; but its sum total is always constant—always uniform. The countless forms and combinations of matter, under the energizing impetus of light, afford indubitable evidence to the mind of a scientist of the truth of this grand doctrine of the correlation and conservation of force.

The constitution of the world, therefore, according to the scientific formula, requires but two factors, *viz.:* matter and force. Matter is the substrate; force is the instrument. Science begins with these, and ends with these. It assumes their existence, modestly confessing that it knows as little and as

much of the nature of one as of that of the other. These assumptions are the only admissible ones in inductive philosophy, if we except those of the primary atom,* and the imponderable ether-medium, so indispensable to a just apprehension of the phenomena of light. Anything besides these would, obviously, be in the way—a superfluity, with which it could not safely deal. Let us examine, for a moment, the bearings of chemistry upon this matter:

No single science, perhaps, represents more per-

*The stupendous reach of mathematics seems not unlikely to remove the ultimate atom from the domain of the hypothetical, and to give it a more appreciative place in our imaginations. The possession of definite knowledge of the length of light-waves has enabled mathematicians to determine the thickness of the ordinary soap-bubble, at its greatest tenuity, just before it breaks. This is found to be the 1-156,000th of an inch. Certain other experiments in the same direction seem to point to the conclusion that if this extreme tenuity of the bubble were extended to the 1-500,000,000th of an inch the limit of divisibility of the water particles would be attained, having reached the ultimate water atom itself. "Moreover," says Prof. Cooke, it is worthy of notice that all these phenomena point to very nearly the same limit. I have great pleasure in referring you, in this connection, to a very remarkable paper of Sir William Thompson, of Glasgow, on this subject, which appeared first in *Nature*. He fixes the limit at between the 1-250,000,000th and 1-5,000,000,000th of an inch, and, in order to give some conception of the degree of coarse-grainedness (as he calls it) thus indicated by the structure, he adds that, if we conceive a sphere of water as large as a pea to be magnified to the size of the earth, each molecule being magnified to the same extent, the magnified structure would be coarser-grained than a heap of small lead shot, but less coarse-grained than a heap of cricket-balls!"—*The New Chemistry*, p. 34–35.

fectly the scope and tendency of the scientific method than modern chemistry. These two factors, matter and force, are the constant companions of the chemist, and with them he is able to effect artificially many wonderful transpositions of matter, and to imitate, in the laboratory, many of those beautiful processes and combinations which are peculiar to the inorganic world. The chemist ascends from one combination of matter to another; from the simple he advances to the more complex; binary, tertiary, quarternary compounds are managed with equal skill and precision. From these, again, he forms other and still more complex combinations; and finally ascends to the manipulation of the organic radicals and bases themselves. The mystery with which organic substances were formerly invested, associated with the dim idea of a vital force —an idea no longer tenable—the modern chemist believes he is able largely to dispel, and he confidently asserts that "although *the cause which determines the growth of organized beings is still a perfect mystery*, we now know that the materials of which they consist are subject to the same laws as mineral matter, and [that] the complexity may be traced to *the peculiar qualities* of carbon." * The chemist has, for many years past, been striving to imitate the organic arrangement of the hypothetical atoms and perfect an organic substance by artificial means. And the assertion has been repeatedly made that success had at last been attained; quite a number of organic

* *The New Chemistry*, p. 292.

acids and bases having been elaborated in the laboratory; and although the base and origin of organic life, the cell, has not yet yielded its mystery to the search and skill of the chemist, the prediction is made in high quarters that it must soon be compelled to do so.* We hope it may; meantime, we wait and watch with ill-concealed anxiety the consequence of such an achievement upon future generations of animal life!

Listen to Professor Huxley on this subject:

"With organic chemistry, molecular physics and physiology yet in their infancy, and every day making prodigious strides, I think it would be the height of presumption for any man to say that the conditions under which matter assumes the properties we call 'vital' may not some day be brought together. All I feel justified in affirming is, that I see no reason for believing that the feat has been performed yet." †

Respecting the primary origin of life the Professor could only indulge in speculation:

"If it were given me to look beyond the abyss of geologically recorded time to the still more remote period

* "The chemist," gratuitously says Prof. Cooke, "has never succeeded in forming a single organic cell, and the whole process of its growth and development is entirely beyond the range of his knowledge; but he has every reason to expect that, in the no-distant future, he will be able to prepare, in his laboratory, both the material of which that cell is fashioned, and the various products with which it becomes filled during life."—*The New Chemistry*, p. 292-293.

† Thomas Henry Huxley, LL. D., F. R. S., etc.: *Inaugural Address before the British Association for the Advancement of Science.* 1870.

when the earth was passing through physical and chemical conditions, which it can no more see again than a man can recall his infancy, I should expect to be a witness of the evolution of living protoplasm from not living matter. I should expect to see it appear under forms of great simplicity, endowed, like existing fungi, with the power of determining the formation of new protoplasm from such matters as ammonium carbonates, oxalates, and tartrates, alkaline and earthy phosphates, and water, without the aid of light." *

Moreover, the chemist is able to analyze the human body, and to tell with precision the various elementary constituents which enter into its organization, and their destiny after its dissolution. Its weight is just the same after the vital functions are arrested as before; and when dust returns to dust, and ashes to ashes, he can demonstrate that all the subject took from nature is given back to her again in the slow but inevitable process of physical disintegration. Not a molecule is lost; not a force missing. Conformable to the order of nature, the elements of man's physical organization ascend the peak of the organic scale, and fall back again to commence once more the slow and toilsome round—but in other forms. But whence is "soul," that mysterious *esse* or principle in the organism, which as yet escapes the counterfeiting brand of the chemist? Whence the *Ego?* Ah! the former is only the force expended *in the organism* by the chemical

* Thomas Henry Huxley, LL. D., F. R. S., etc.: *Inaugural Address before the British Association for the Advancement of Science.*

processes of transformation and disintegration of tissue! So long as these processes continue, the organism is able to utilize the force liberated by the process of disintegration, which is as constant in life as after death, in its own behalf, and for its own perpetuity. When it can no longer do that, life ceases; its flame goes out for the want of heat, rather than fuel; the force which constitutes life reverts to nature along with the elements disintegrated!

Such, in brief, is the scientific interpretation of the problem of human life and death—of all life and of all death on the planet. But is there nothing more in the complex problems of life and death? No I, no Me? Neither, within the confines of scientific analysis. The *I* is the unknown quantity. But as to the forces of life, etc., they have lapsed. The chemico-vital philosophy of the scientist is competent to deal with all within its reach, which includes all nature's organic domain. It is as competent to explain the growth and decadence of mind, as that of muscle; the mental functions, as the lower, corporeal functions. The intellect of a philosopher; the imagination of a poet; the spirituality of a saint; the trusting faith of an anchorite; the extravagant sentiment of love; the remorse of conscience; the emotions of grief, fear, revenge, etc., present phenomena as explicable, it is alleged, by the terms of this philosophy, as are those on the lower plane of life and nature! No less, and no more.

Furthermore, we have already remarked the high

position which the sun occupies in physical philosophy, as the force-factor of creation. "The sun is the source of all those forms of light and life," says a modern astronomer, * which exist upon the earth. "That is no idle dream," continues he. No fancy of the imagination. "Every form of force upon the earth; every action that we perform; all the forms of forces we know of; even the thoughts we think, may be said to come from the sun: It is by the sun's heat that life is maintained upon the earth."

This is an apparent truth; it is a scientific fact, no doubt. To physical science, which has confessedly achieved such great results, and been of such incalculable benefit to the darkly-minded millions of mankind, the sun is the most important factor. The sun being the source of all those forces which the sensuous mind conceives to be essential, nay indispensable, to the order, stability, progressive perpetuity and government of the world, is a very important body. Nothing is more manifest to the purely objective sense, nor more consistent with the tendency of scientific observation than that the sun is a more important factor in the universe than the Deity; and that the absence of the former would be more disastrous to our planetary system than that of the latter. The fallacy of such a conception is no fault of science, but due rather to the habit man has of viewing scientific induction—of interpreting scientific demonstration.

Finally, it is needless longer to multiply evidence

* Prof. Proctor's *Lecture on the Sun*, New York, Jan. 8, 1874.

of the inevitable tendency of the exclusively analytical method in dealing with the complex problems of life and mind. · An "exclusively analytical view of the world," * says M. Papillon, before quoted, "has led us to a first undeniable certainty, the existence of a principle of energy and motion. A second view of the universe, exclusively synthetic, leads us, as we have seen, to another certainty, which is the existence of a principle of differentiation and harmony. This principle is what we call spirit." The existence of this principle of differentiation in nature is as certain to the deductive mind as is that of the primary atom, or the imponderable ether to the inductive mind. Indeed, to the former, this differentiation is no hypothesis at all. It represents a factor, a personality—in nature as fixed in its seat as self-consciousness. Without its aid one could never rise to the cognition of a creature, much less to that of a Creator, but must be forever compelled to confine his aspirations to the temporal destiny of acids and alkalies, functions and forces. The *Ego* in man could never have anything more than a mythical existence; faith would ever be indispensable to bridge over the chasm between soul life and external existence—to repair a most fatal defect in the scientific philosophy of human life.

It is unnecessary, perhaps, to enlarge upon this phase of our subject; for nothing can be more perfectly obvious than the inadequacy of the scientific method to meet the requirements of even a rational philosophy, and to satisfy the natural instincts of the

* *The Constitution of Matter.*

human heart. Mr. Buckle, in the essay to which we have referred, remarks this defect of the analytical or scientific method in resolving physical problems, and points out the necessity of bringing to our aid the synthetical or deductive method, if we would form just conceptions of even physical phenomena. "The farther our knowledge advances," says he, "the greater will be the need of rising to transcendental views of the physical world." * If one must generalize and form hypotheses, it is certainly quite as becoming to the dignity of the understanding to do so on the subjective side of nature as on the objective; and if one then fails to fathom the Infinite, as one certainly will, he shall not at least fail to get below the surface of things, nor commit the

* "What makes this all the more serious is, that the farther our knowledge advances, the greater will be the need of rising to transcendental views of the physical world. To the magnificent doctrine of the indestructibility of matter, we are now adding the no less magnificent one of the indestructibility of force; and we are beginning to perceive that, according to the ordinary scientific treatment, our investigations must be confined to questions of metamorphosis and of distribution; that the study of causes and of entities is forbidden to us; and that we are limited to phenomena through which and above which we can never hope to pass. But, unless I greatly err, there is something in us which craves far more than this. Surely we shall not always be satisfied, even in physical science, with the cheerless prospect of never reaching beyond the laws of coexistence and of sequence. Surely this is not the be-all and end-all of our knowledge. And yet, according to the strict canons of inductive logic, we can do no more."—*Buckle's Essay on the Influence of Women on the Progress of Knowledge.*

too common error of mistaking the phenomenal for the actual in nature.

"The object of science is to teach us the invisible," says an eminent physicist.* We have no doubt of it. The influence of scientific studies tends undeniably in that direction. But we respectfully maintain, and the point cannot be too strongly insisted upon, that it is not due to any intrinsic virtue of the inductive method, that the invisible is revealed—except *force* be the invisible referred to, which is always invisible; but rather to the unfolding of the interior perceptions, which such studies effect. One might with equal reason claim that the superstitious vagaries of the Middle Ages promoted the growth of the moral virtues, because those graces were cultivated, to some extent, during their propagation. It is easy to mistake the coincident for the consequent. Man comes to regard scientific demonstrations as something to delight his intellect, without disturbing his faith. The enlightened mind instinctively transposes such demonstrations, and is thus enabled so to interpret them as to do no violence to the existence of his personality here, or to his destiny in the hereafter. In other words, he comes to regard scientific *facts* as physical illusions; and too often to confound the scientifically true with the physically false.

* Tyndall.

INDEX.

Ascidian, tendency in to differentiate organs, pp. 60–66.
Agassiz on the perfect insect, p. 62.
Amœba, lowest form of living matter, p. 58.
Amputation of limbs, mental effects of, pp. 78–79; Dr. Luys' observations on, p. 79.
Anaxarchus, the Sceptic, p. x.
Annelida, wanting in cephalic ganglia, p. 62.
Apothegms, pp. viii., 1, 43, 88, 129, 172, 209, 241.
Aristotle's place in philosophy, p. xiv.
Arnold, Matthew, cited, p. 151.
Articulata, mental characteristics of, p. 61.
Arrested development, case of by the author, p. 77; proximate causes of, pp. 77–78.

BAILLARGER, case of arrested development of, p. 76.
Body, unity of, p. 47; ensemble of necessary to comprehension of the whole, *id.*; Despine's (*Body, continued.*) views on the, *id.*; independence of the two systems of nerves in the, p. 48; metaphysical conception of the, p. 50; unity of, and soul, *id.*; Plutarch cited on the nature of, *id.*; law of harmony in the, p. 52; M. Vacherot cited, *id.*; necessity of transcendental methods, p. 285; unity of disclosed by disease, 89; Broussais cited, pp. 89–90; evidence of pathology on, p. 90; Griesinger cited, *id.*; in malady, an individual to deal with, p. 91; character degraded by malady, *id.*; mutuality of physical and psychical states, p. 92; influence of gout on morals, *id.*; effects of disturbance of the grand sympathetic in children, p. 93; vice often due to disease, p. 95; case of the horse Longfellow, foot-note, p. 96; physical and psychical disease often supplement each other, p. 96, *et seq.*; mania, due to diseased liver, p. 99; case cited, *id.*;

(*Body, continued.*)
Despine's observation on disorders of sexual function of women, p. 100; author's observation on, p. 101, *et seq.*; disorders of, in men, p. 104, *et seq.*; Griesinger on, pp. 107–108; man's dependence on his physique, p. 108; the pleasure of health, p. 109; joys of living dependent on healthy viscera, *id.*; brain disease and insanity, p. 112; mania, obscurity of its causes, p. 115; the need of minute examinations in, p. 116; Griesinger's prediction, *id.*; Van der Kolk's opinion regarding proximate causes of insanity, p. 117; Maudsley cited, *id.*; acute mania and the meninges, p. 118; testimony of Griesinger, p. 119; the insane deranged everywhere, p. 120; psychical defects and physical deformities, p. 121, *et seq.*; physical disease a preventative of insanity, p. 124; physical effects of psychical causes, p. 125; Feuchtersleben cited, *id.*; signs of mental decay, p. 126; significance of, p. 127, *et seq.*

Brewster, Sir David, on light, p. 263.

Broussais, cited, p. 89.

Brownson's *Review* cited, p. 134.

Buckle on the scientific method, p. 254; on the objects of science, p. 285; on the deductive method, p. 259.

CALLIDES, the Idealist, p. x.

Carpenter, Dr., views on instinct and reflex action, p. 62; his *Mental Physiology* cited, *id.*; views on automata cited, p. 67.

Cerebral centres, localization of, pp. 82–83; Ecker on, p. 82; Ferrier on, p. 84.

Cerebral convolutions, Ecker on, cited, p. 82.

Character predicated on states of the physique, p. 99, *et seq.*

Christian Science, revival of, p. xxiii.; *Condensed Thoughts about Christian Science* cited, p. xxx.

Comte, M., *Positive Philosophy*, quoted, p. 249; his criticism of the undulatory theory of light, *id.*

Cooke on the ether hypothesis, p. 266; *New Chemistry*, p. 276.

Courrier des États Unis cited, p. 139.

Critias, the Idealist, p. x.

Critiques on the Unity of Divine and Human Agency, Part VI. p. 207; criticism of "Scientist," p. 210; predictions of the imagination unreliable, *id.*; the essay characterized as incongruous, p. 211; mind not an entity, p. 213; the author characterized as mystical, p. 215; doctrine of a Father controverted, p. 217, *et seq.*; necessity, the only law recognized by science, p. 218; Christian doctrine of prayer controverted, p. 219; would not evoke a mysterious agency, p. 220; views of "Theologus," *id.*; the authority of Scripture recognized, p. 221; authority of the Catholic Church

(*Critiques, continued.*)
supreme, *id.*; physical agencies no criteria in spiritual things, p. 222; the "Word" a source of light, p. 223; innate idea of God, p. 224; no nation without it, *id.*; Christianity the crown and end, *id.*; Jesus, the Man-God, *id.*; divine power objective, p. 225; author's view of divine agency controverted, p. 226; his course illogical, p. 227; his views narrow and material, *id.*; society an outgrowth of religion, p. 229; physiology of thought and feeling disputed, p. 231; the Creator above His laws; orthodox conception of divine agency preferred, p. 232; views of "Radicus," *id.*; exaggerated views of the scope of science, p. 233; insufficiency of "law" to interpret phenomena, p. 234; powers of science limited, *id.*; study of science exalting, p. 235; Mr. Spottiswoode's address quoted, pp. 235–236; doctrine of thinking and feeling restated, *id.*; the doctrine not disproved, p. 237; truth susceptible of rational interpretation, p. 238; mental processes of all men alike, *id.*; inspiration no exclusive fact in human experience, *id.*; mental difference between man and the brute, p. 239; significance of the phrase, "Divine afflatus," *id.*; the problems of mind restated, p. 240; nature and the unconscious, p. 241; the Cosmos based on Supreme beneficence, p. 242; all nature marvellous, *id.*; the author's view of Leibnitz's doctrine defended, p. 243; "Theologus" controverted, *id.*; jails and charitable institutions no credit to civilization, p. 244; the divine character of the religion of Jesus, p. 245; its human character equally evident, *id.*

Crystallization, significant phenomena of, p. 149.

DALTON, DR. on localization of brain centres, p. xxi.

Dancel's case of arrested development, p. 76.

Decay, mental, signs of, p. 126, *et seq.*

Deductive method in philosophy, represented by Parmenides, p. xii.; Buckle on the, p. 285.

Democritus, the Sceptic, p. x.

Despine's *Psychologie Naturelle* cited, pp. 47–48, *et seq.*

Diagoras, the Sceptic, p. x.

Diomenes, the Sceptic, p. x.

Divine and Human Agency, the Unity of, Part V., p. 171; general conception of the subject, p. 173; Greek conception of the, p. 174; intercourse between godsand men, *id.*; Socrates on the, *id.*; Plutarch, belief in, p. 175; Hermogenes, trust in the, *id.*; belief in, prevalent among mystics in all ages, p. 176; ignorance of mental processes

(*Divine, continued.*)
general, p. 177; inspiration, divine, belief in, p. 179; inspiration of the clergy, belief in, *id.*; change in the, in modern times, p. 180; Despine cited, foot-note, p. 181; medium of divine intercourse, p. 182; reality of divine intercommunication, *id.*; unity of the divine and human, *id.*; this, no figure of speech, *id.*; not influenced by belief, or unbelief, *id.*; union of, intimate in health, p. 183; dimmed in disease, *id.*; feeling of, governed by laws of the physique, p. 184; Holmes on, p. 185; Argyle, duke of, on mind and instinct, *id.*; condition of "Divine afflatus," p. 186; Lewes', *Physical Basis of Mind* quoted, *id.*; Despine cited, p. 187; problem of thought and feeling stated, p. 188; inspiration, not peculiar to the clergy, p. 191; nor a mental quality of exclusive character, *id.*; man's confidence in the providences, p. 193; instinct of dependence on, p. 194; society, a depository of divine agency, p. 195; Greg, on the subject, p. 196; the religious feeling, p. 198; Strauss, on the, p. 199; influence of prayer, *id.*; views of Kant, *id.*; subjective influence of, p. 200; irrational conceptions of, p. 201; President Garfield, object of prayer, *id.*; the *Congregationalist's* claim for, *id.*; belief

(*Divine, continued.*)
in acts of propitiation, p. 203; moral utility of fasting, *id.*; religious absurdities, *id.*; utility of self-confidence, p. 204; maxims of divine men, on the, *id.*; ideal faith, p. 205; all divine, p. 206; the indwelling divinity, *id.*; Carlyle on the, *id.*

Draper, Prof., on light, p. 269.

ELIOT, GEORGE, her *Spanish Gypsy* quoted, p. 55.

Epilogue, p. 249.

Ether hypothesis, p. 278.

FEUCHTERSLEBEN on physical effects of psychical causes, p. 125.

Final causes, M. Vacherot, on, p. 52.

Frankland's food tables, p. 275–6.

GARFIELD, President, case of, referred to, p. 201.

Goëthe on the garment of God, p. 56; human body the visible garment of, *id.*

Gorgias, the Idealist, p. x.

Greg, Mr., on Society, or the State, p. 196.

Griesinger, cases of idiocy, by, pp. 75–77; individual, the object of treatment, not disease, p. 90; causes of insanity, p. 119; Mitchell, case of idiocy cited, p. 76.

Groves' law of conservation of force, p. 270.

HÆCKEL'S *History of Creation* cited, p. 54.

Hahnemann, on mental effects of disease, p. 91.
Hermogenes' belief in the gods, p. 175.
History of *the Inductive Sciences* cited, p. xxii.
Holcombe's, Dr., fanciful idea of morbific causes, p. xxx.
Huxley's *Man's Place in Nature* cited, p. 55.

Imago, or perfect insect, p. 63; evidence of the unity of the physical and psychical afforded by the, *id.*
Inductive method in philosophy, represented by Democritus, p. xiii.
Inspiration, doctrine of divine, p. 179.

LACTANTIUS' contempt for learning, p. xxvii.
Le Conte, Prof., first and secondary causes, p. 256.
Lefèvre, M., on philosophy, cited, p. xiv., *et seq.*
Leibnitz's idea of God, p. 243.
Leucippus, pupil of Democritus, p. x.
Lewes, *Problems of Life and Mind* cited, pp. 46–54, *et seq.*
Life and mind, chemical views of, p. 280.
Life, *Amœba*, lowest form of, p. 58; in protoplasm, p. 59; forms of, *id.*; a lower form of mind, p. 60; life and mind correlatives, p. 12; nature of, a force, p. 17;, views of many philosophers on, p. 11, *et seq.*; (*Life, continued.*) forms of, identified with certain substances, p. 50, *et seq.*
Lillie, Rev. James, cited, p. 133.
Lucretius, the poet and Sceptic, p. x.

MALADY, unity of physical and psychical, p. 91, *et seq.*; vice often due to, p .94; natural character transformed by, p. 96, *et seq.*; illustrative case cited, p. 99; suppositititious case cited, p. 100; Despine on, p. 99.
Man, a physiological unit, p. 51; a cosmos in miniature, *id.*; *Place in Nature*, p. 55; comprehends both soul and body, p. 57; the highest link in the chain of the *vertebrata*, p. 65; weight of brain in, p. 72; mental difference between, and the ape, *id.*; contains humanity, p. 57.
Matter, Life and Mind, Part I., the scope of science in respect of, p. 4; method of science may be extended to psychology, p. 5; to subject and object, *id.*; subject not separable from object, *id.*; natural law identical with the Supreme Will, *id.*; Despine and Lewes cited on, *id.*; matter and force, identity of, p. 6; false views of matter, p. 7; Carpenter controverted, pp. 7–8; mystery of, p. 8; Gaudin, cited, p. 9; matter the garment of the Infinite, p. 10; Goëthe cited, *id.*; definitions of, p. 11. *et seq.*; M. Papillon's views on, cited, p. 12;

(*Matter, continued.*)
life a correlative of mind, *i.l.*; Cuvier, Majendie and Bichat, cited, *id.*; Stahl's principle of organization, p. 14; Darwin, Whytt, Fleming, Mead and others, cited, *id.*; animal spirits of Fleming, p. 15; Russell cited, *id.*; Cullen, Huxley, Grove and M. Cuvier cited, p. 16; Bichat on life, p. 17; views of Whewell, Spencer, M. Candolle, Descarte, cited, pp. 17–18; Brown-Sequard and the life force, pp. 19–20; M. Papillon, on, pp. 21–22; Farraday referred to, p. 24; exalting influence of the study of science, *id.*; seat of the soul, p. 25; nature of soul, Plato cited on the, *id.*; Democritus and other Greek writers cited on the, pp. 26–27; Aristotle, source of rational ideas on, p. 27; Novalis' exalted ideas of the body, p. 29; Jesus, the idealist, p. 30; Strauss on soul and body, p. 31; the immanence of God in man, p. 33; Carlyle cited on the, *id.*; vitality, Lewes on, p. 34; the bearings of materialistic views, not atheistic, p. 36, *et seq*; views of Strauss on, p. 39; the inscrutableness of God, p. 41.

Matthew, Father, miraculous cures by, p. 154.

Maudsley's *Body and Mind* cited, pp. 56–75; *Physiology and Pathology of the Mind* cited, pp. 57–75; case of idiocy by, referred to, *id.*

McCloskey, Cardinal, cited, p. 133; his belief in special providences, *id.*

Melissius, the Idealist, p. x.

Metrodorus, the Sceptic, p. x.

Milton's view of the monism of soul and body, p. 56.

Mind, not exclusively in the head, p. 54; Lewes quoted on the, *id.*; Huxley cited, p. 55; Pflüger, experiments of, *id.*; *Body and Mind*, cited, p. 56. mind in nature, 56; its relation to life, p. 58; to substance, p. 60; its connection with brain and spinal cord, p. 69; lower grade of, in the cord, p. 68; unconscious mind, *id.*; influence of, in curing disease, p. 70; healing wounds, *id.*; the body's supreme incarnation, p. 65.

Moses, cosmogony of, pp. x–xi.

Natural and Supernatural, Unity of the, Part IV. p. 131; popular belief regarding it, *id.*; relation of Deity to phenomena, p. 132; intimacy of God and man, p. 133; Cardinal McCloskey on, *id.*; Rev. James Lillie on, *id.*; irrational claims of the clergy on the, p. 134; Brownson's *Review* cited, *id.*; Mill on weak beliefs, p. 135; extravagant credulity, p. 136; law and miracles, p. 137; miracles of the devil, p. 138; position of the Roman Church on, p. 138; power of Satan, belief in the, *id.*; only less than that of Deity, *id.*; vaunting credulity of Christ-

(*Natural and Supernatural, cont.*) ians, p. 139, *et seq.*; idea of Providence, p. 140; examples of, *id.*; influence of suffering, p. 142; end and object of life, p. 143; M. de Tocqueville on, *id.*; causes of phenomena, where to seek, p. 144; Mill, on design, *id.*; the unconscient in nature, examples of, p. 145, *et seq.*; chemical affinity, p. 148; crystallization, phenomena of, p. 149; miracles, phenomena of, p. 150; legitimate character of, so-called, *id.*; Matthew Arnold on, p. 151; healing, phenomena of, *id.*; phenomena of expectation and hypnotic suggestion, p. 152; Father Matthew's miraculous cures, p. 154; Prince Hohenlohe, career of, *id.*; Dr. Tuke cited, *id.*; love of the marvellous, pp. 156–157; the majesty of the natural, p. 158; Martineau cited on, *id.*; beauty of truth, Plutarch on, *id.*; miraculous, Renan cited on the, p. 159; the phenomena of man the most miraculous, p. 161, *et seq.*; of man, normal, *id.*; of man, abnormal, p. 163, *et seq.*; medium of revealed truth, need of purity of, p. 165; sources of error in the, p. 166; undue credulity to be guarded against, p. 167; honest doubt, need of, *id.*; mysteries of the Cosmos to be discovered, not revealed, p. 169; superiority of normal sight, *id.*; sympathy with M. Renan's views, *id.*; M. Renan cited, *id.*

Nessus, the Sceptic, p. x.

Newton and the emission hypothesis, p. 264.

PAPILLON, on the constitution of matter, p. 12; on the nature of life, pp. 21–22.

Phenomena, prescribes its own laws, p. 137.

Philosophy, Historical and Critical cited, p. xiv.

Philosophy and Theosophy—Prologue, p. ix.; struggle for supremacy between, *id.*; inductive and deductive methods involved in it, *id.*; ancient origin of the, *id.*; idealists and sceptics represented respectively by Parmenides and Democritus, p. x.; later by Plato and Aristotle, *id.*; cosmogony of Moses, p. xi.; of Plato, *id.*; method of the Rationalists, p. xii.; early speculations concerning atoms, p. xiv.; Lefèvre quoted, *id.*; matter and void, *id.*; Aristotle, place of, in philosophy, p. xv.; the Alexandrian school, *id.*; indebtedness of science to the rational method, p. xvi.; dualism of matter, ideal, p. xvii.; profound mystery of, p. xviii.; nervous matter, *id.*; forms of life due to states of matter, *id.*; organic properties, *id.*; each tissue possesses its own peculiar property, *id.*; illustration by Mr. Lewes, p. xix.; the power that presides over the organism, p. xx.; seat of intellection, *id.*; experiments

(*Philosophy and Theosophy, cont.*) of M. Flourens and others, p. xxi.; consciousness and the brain, *id.*; experiments of Valentine, *id.*; unity of brain and mind, *id.*; the fact controverted by the idealists, p. xxii.; their philosophy subordinated matter to mind, *id.*; Whewell quoted, *id.*; doctrine of the illusion of matter, p. xxiii.; mind the only real existence, *id.*; views of Gorgias, Xenophanes, Pyrrho, Zeno and others of the ideal school, *id.*; Plotinus and mental science, *id.*; modern Neo-Platonism, p. xxiv.; extreme ideas of this sect, *id.*; their alleged power over matter, p. xxv.; over disease, *id.*; professed familiarity with the Deity, *id.*; working of miracles, *id.*; Swedenborg's views, p. xxvi.; mental idea of disease, *id.*; Christianity discredited learning, p. xxvii.; views of Lactantius, *id.*; imposture medicine, p. xxviii.; revival of, p. xxix.; Dr. Holcombe cited, p. xxx.; inutility of speculation concerning the unknowable, p. xxxi.; insoluble character of the problems of Matter, Life and Mind, *id.*

Physical Basis of Mind cited, pp. 54–186.

Physical and psychical, mutual dependence of, p. 47.

Physical defects and mental deformity, observations on their relation, pp. 79–80–81–82.

Physiology and Pathology of the Mind cited, p. 57.

Plato's cosmogony, p. xi.; superiority of to the Hebraic, *id.*; his idea of the eternity of matter, p. xii.

Playfair on doubt, p. xii.

Plotinus, theosophy of, p. xxiv.

Plutarch's *Morals*, cited, pp. 27–50–158–175–176–205–264; his idea of the body, p. 50; of the loveliness of truth, *id.*

Polus, the Idealist, p. x.

Prayer, influence of, p. 199.

Principles of Comparative Physiology cited, pp. 60–61.

Problems of Life and Mind cited, p. 46, *et seq.*

Prodicus, the Sceptic, p. x.

Proctor, Prof., on Sun-force, p. 282.

Prologue, p. ix.

Protagorus, the Sceptic, p. x.

Psychologie Naturelle, quoted, pp. 5–46–47–48–49, *et seq.*

"RADICUS" on divine inspiration, p. 232.

Renan, M., cited, p. 157.

SATAN, lesser miracles effected by, p. 138.

Sciens, observation, the domain of, p. 4; inductive method, the result of, *id.*; possibilities, vastness of, pp. 2–3; phenomena its primacy, p. 249; study of, exalting, p. 24.

"Scientist's" objections to the author's views of Divine and Human Agency, p. 210.

Scope of inductive philosophy, the, p. 247; stages of mental development according to M. Comte, p. 249; scientific trend of modern thought, *id.*; multiplication of sciences, p. 250; boundless sphere of science, p. 251; truth its object, *id.*; dangers of the scientific spirit, p. 252; Prof. Tyndall quoted, p. 253; unsearchableness of God, *id.*; statement of Lessing, foot-note, *id.*; Lewes on the object of investigation, p. 254; Despine on the object of science, *id.*; Buckle on the scientific method, *id.*; phenomena, the object of investigation, not the *neumena*, *id.*; Strauss on soul and body, p. 255; Prof. Le Conte as a liberal, p. 256; on first and secondary causes, *id.*; absurdity of placing Deity in the solar spaces, p. 257; Deity the first and last of things, p. 258; Buckle on the deductive method, p. 259; the thing evolved, *id.*; M. Papillon on matter and spirit, p. 261; idea of a spiritual world not logically impossible, p. 262; phenomena of light, Brewster on the, p. 263; Newton on the, p. 264; opinions of ancient philosophers on the, *id.*; demonstrations of Dr. Young, p. 265; views of Prof. Tyndall, *id.*; the ether hypothesis, *id.*; light a force, *id.*; Prof. Cooke's scepticism regarding the hypothesis of, p. 266; M. Comte's criticism (*Scientific observation, continued.*) of the, p. 267; Prof. Draper not in accord with the doctrine, p. 269; agency of the mind in the phenomena of light, p. 268; correlation of the forces, p. 270; Prof. Grove's statement of the law of, p. 271; Prof. Youman's idea of the law of, p. 272; Mr. Spencer's application of it, p. 273; Brown-Sequard and the nerve-force, *id.*; application of the law to foods, p. 275; Dr. Smith quoted on the, *id.*; Prof. Frankland's food tables, foot-note, pp., 275–6; objective character of this view, p. 276; hypothesis of imponderable ether, p. 278; divisibility of matter, foot-note, from *The New Chemistry*, *id.*; the vital force, p. 279; chemical views of origin of life, p. 280; Prof. Huxley on, *id.*; the Ego not found by the chemist, p. 280; absurdity of the force-theories, p. 282; Prof. Proctor's extreme application of them, *id.*; his lecture on the sun, quoted, *id.*; the Ego a principle of differentiation, p. 284; necessity of looking beyond finite limits for an explanation of Being, *id.*; views of Buckle cited, p. 285; Prof. Tyndall on the need of transcendental views, *id.*; Buckle on the object of science, *id.*; author's observations on, p. 286.

Sequard, Dr. Brown, on nerve-force, p. 273.

Socrates, belief in the Dæmon, p. 174.

Soul and Body, Part II., the relation of, p. 45; the problem not concerned with immortality, *id.*: nor with the existence of Deity, p. 46; nor with a spiritual world, *id.*; method of physiologists, *id.*; man the object of study, p. 47; Despine cited, *id.*; two-fold existence of man, p. 48; mutual dependence of physical and psychical, *id.*; of conscient and unconscient, *id.*; Despine controverted, *id.*; fear of rational logic, p. 49; Plutarch's idea of body, p. 50; man a physiological unit, p. 51; a cosmos in miniature, *id.*; life and mind correlatives *id.*; M. Vacherot cited, p. 52; unity of substance and force, *id.*; law of design immanent in matter, *id.*; identity of natural law and Supreme Will, p. 53; Haeckel cited, *id.*; Von Hartmann's views on, *id.*; mind not confined to brain, p. 54; man thinks; the organism feels and acts, *id.*; Lewes' views, *id.*; "George Eliot," cited, p. 55; logical faculty in the head, *id.*; Huxley on, *id.*; Pflüger cited, *id.*; mind in nature, p. 56; doctrine of, not new, *id.*; advanced by Aristotle, *id.*; reaffirmed by Leibnitz and others, *id.*; supported by Milton, Goëthe and others, *id.*; Maudsley cited on the, *id.*; Strauss on the unity of subjective and objective, p. 57; subject illustrated by evolution of animal life, p. 58, *et seq.*; "living jelly," mind in, p. 59; Carpenter cited, *id.*; beginning of true cells, *id.*; the sponge tribe, *id.*; mollusk class, p. 60; beginning of ganglions in the, *id.*; reflex functions in, p. 61; the *Articulata*, *id.*; instinct in the, p. 62, *et seq.*; Carpenter controverted, *id.*; the *Annelida*, p. 63; the perfect insect, *id.*; Agassiz quoted, *id.*; operations of, not directed by Deity, p. 64; phenomena never dissociated from its cause, p. 65; beau-ideal of instinctive life, p. 66; psychical powers dependent on brain, p. 68; lapses with brain failure, *id.*; anencephalic idiots, *id.*; unconscious mind and will, *id.*; actions of sympathetic ganglions, illustrated, p. 69; Balfour Stewart quoted, footnote, *id.*; Pfluger's experiment with a frog, p. 70; *vis medicatrix naturae*, *id.*; centres of thinking and feeling, p. 71; motor centres, dependence on, *id.*; cortical substance, mental character dependent on, p. 72; significance of convolutions, size and depths of, *id.*; weight of brain and mental power, p. 73; Henle controverted, *id.*; Huxley's views on, *id.*; cases of idiocy referred to by Marshall, p. 74; Mr. Paget's case, *id.*; Maudsley cited on idiocy,

(*Soul and Body, continued.*)

(*Soul and Body, continued.*)
id.; Pinel quoted by Griesinger, p. 75; Dr. Mitchell's case of idiocy, *id.*; cases of, cited from MM. Dancel and Baillarger, p. 76; case by the author, p. 77; pathology of idiocy, p. 78, *et seq.*; localization of brain centres, Prof. Ecker on, p. 82 *et seq.*; general considerations on, p. 83, *et seq.*
Spanish Gypsy, the, cited, p. 55.
Spheres, evil, of Swedenborg, p. xxix.
Spottiswoode's Wm., *Address* quoted, p. 235.
Strauss on the Cosmos, p. 57; his *Old Faith and the New* cited, *id.*; on soul and body, p. 255.
Swedenborg's view of morbid causes, p. xxix; his system of correspondences, p. xxvi.
Sympathetic ganglions, disorders of, p. 98.

The Old Faith and the New, cited p. 199.
"Theologus," criticism of the author's views of Divine and Human Agency, p. 220.
Thrasymachus, the Idealist, p. x.
Tocqueville, M. de, quoted, p. 143.
Truth, Genius the discoverer of, Science its verifier, p. 85.
Tyndall on the need of transcendental views of things, p. 285.
Unconscious mind and will, p. 68; Von Hartmann's *Philosophy of the Unconscious* cited, p. 53.

VACHEROT, M. *Philosophy of Final Causes* cited, pp. 52–3.
Valentine, experiment of, p. xxi.
Van der Kolk on proximate causes of insanity, p. 117; *Vertebrata*, the highest link in the chain of animal life, p. 56.
Von Hartmann's *Philosophy of the Unconscious* cited, p. xxi.

WHEWELL on the fallacies of the Neo-Platonists, p. xxii.; his *History of the Inductive Sciences*, cited, *id.*

XENOPHANES, the Idealist, p. xxiii.

YOUMAN'S Idea of the law of correlation of forces, p. 272.
Young, Dr. Thomas, the mathematician, p. 265.

ZENO, the Idealist, p. xxiii.

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